NEXSAN

ELIMINATE TAPE WITH ASSUREON®

THE DIGITAL AGE TRAPPED IN AN 8 TRACK WORLD

Tape has been a standard data storage medium for more than 50 years, but that era is winding down. The capabilities of tape have been outpaced by mammoth increases in corporate data, the recovery and data integrity demands of regulatory compliance and the challenge of simplifying, automating and consolidating the data protection infrastructure in a restrictive IT budget environment.

The Assureon disk archive overcomes all the nagging performance and data integrity issues related to tape archiving while greatly reducing cost and complexity with infrastructure consolidation and automated management.

WHITE PAPER

"Besides the obvious benefit of making your storage infrastructure faster, simpler and safer, Assureon dramatically reduces the cost structure of your storage."

Magnetic tape as a data storage technology is approaching the end of its useful life. In the past, the limited volume of data made tape sensible, however, its functionality has been overrun by historic data growth and a new IT budget reality that is forcing storage administrators to adopt new solutions that lower the Total Cost of Ownership (TCO) for storage.

Tape simply cannot measure up to today's standards for reliable, secure, simplified, cost-effective storage while meeting an organization's performance requirements.

Nexsan's Assureon secure disk archive is a state-of-the-art archival storage solution that innovates where tape stagnates for fast, reliable, secure storage. Going forward, tape may still exist to be tucked away inside a mountain, or for data portability, but even those days are limited.

Assureon brings a competitive edge for companies looking to get rid of the storage headaches that come with tape systems. Moreover, for any organization that has data that demands guarantees, no other storage solution will make you feel safer and more at ease about your protection architecture than Assureon. If data protection risks within your current storage infrastructure have ever kept you up at night, Assureon will ensure that you never worry about the risk of data loss again.

With Assureon, Nexsan has established a best practice model on how data archiving and protection should be deployed. Nexsan's "simpler is better" concept improves the performance, security and reliability of archival storage with infrastructure consolidation and simplified storage management to create the type of storage cost reductions and efficiencies required of IT professionals.

WHY ASSUREON OVER TAPE?

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"Up to 71% of all restores from tape fail."

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The pain points of tape archiving are well documented: tape is slow, unreliable, complex and more expensive on a cost-per-byte protected basis. Given these limitations, why is tape still used? There is still a perception that tape is "good enough" to meet a company's data protection requirements. Despite well publicized findings that show inherent unreliability makes archiving and protecting data with tape the largest risk exposure in a data center. Standard disk-to-disk (D2D) systems provide a significant performance boost when compared to tape, but those systems still do not go far enough to help IT professionals drive down complexity, cost and risk. By delivering far more than just performance or RAID protection, Assureon offers a suite of data protection features while automating storage management and eliminating layers of storage hierarchy with infrastructure consolidation.

Besides the obvious benefits of making your storage infrastructure faster, simpler and safer, Assureon dramatically reduces the overall cost structure of your storage. With infrastructure consolidation, there is less to buy and less to manage. And with automated management combined with industry leading energy savings, the cost to operate your storage will see significant savings as well.

Aside from delivering a new standard in comprehensive cost savings, Assureon delivers a new standard in performance with its unique zero-recovery time approach. Assureon is a single, complete storage infrastructure solution handling email archives, electronic discovery, medical images, financial records and more. The privacy, integrity and longevity of your data is finally assured.

For a deeper dive into the inherent limitations of tape, see Nexsan's 10 Min White Paper, "Making Cents of Tape Versus Disk", (http://www.nexsan.com/whitepapers/Nexsan_10min_WhitePaper_Tape_vs_Disk_GA020110-A.pdf), where the issues of tape reliability, performance, management and expense are examined in close detail. This paper will summarize the issues related to tape-based data protection and will illustrate how Assureon goes beyond conventional disk and tape storage systems to provide the next generation of data protection and highly efficient storage.

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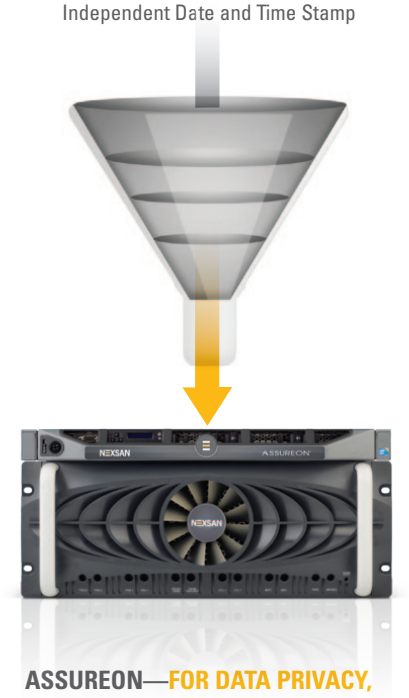
File Fingerprinting
Self Auditing
Self Healing
File Access Audit Trail
File Serialization
Legal Holds
Encryption
WORM Storage
Automated Retention and
Deletion Secure File Deletion
File Versioning
Independent Date and Time Stamp



ASSUREON—FOR DATA PRIVACY, INTEGRITY AND LONGEVITY

LONG TERM PROTECTION

The point of protection is data survivability. This is a function of the reliability and data integrity designed into the data storage system. In the case of tape, it falls short on both fronts. Assureon's disk-based architecture was designed from the ground up to reduce risk and deliver the industry's most secure and reliable archival storage that is unmatched by any tape solution. Assureon provides enterprise-class archiving at a price geared to meet SMB and mid-range IT budget requirements.

Surprisingly, the last application for tape is one where data protection is paramount: restoring data. Tape continues to be used for applications even though Gartner estimates that up to 71 percent of all restores from tape fail[1]. This is a huge risk to businesses attempting to restore data from tape as both Gartner and Storage Magazine reported some 34 percent of companies never test restoring from tape. Of those that did test, 77 percent found restores from their tape failed[2]. To compensate for its inherent unreliability, tape protection architectures are based on a complex model of creating multiple copies of data in the hope that one copy will be recoverable. So, why risk not getting your data back from tape?

Assureon is purpose-built as a safe deposit box for the digital age with an architecture that ensures the highest levels of data longevity, privacy and integrity. While tape was never designed to meet today's storage demands, Assureon was created as a simple, fully integrated solution that offers enterprise class manageability, consolidation and scalability. As much as typical disk solutions offer greater data reliability than tape, they still don't have the suite of data protection features within Assureon to ensure data integrity. If your job is on the line when it comes to data integrity, Assureon is the best job security you can find.

Because some data demands guarantees, organizations need absolute assurance that a file stored is the exactly the file that will be retrieved regardless of time. Assureon delivers this kind of assurance by assigning a unique digital fingerprint to each file while periodically and automatically performing a data integrity audit and self-healing process if any discrepancies are found.

Also important to note, Assureon justifies long-term archiving on disk with AutoMAID® (Automatic Massive Array of Idle Disks) energy saving technology by placing idle disks into progressively deeper levels of sleep while uniquely delivering near instantaneous response times. By delivering "Speed with Green", AutoMAID serves up all the cost saving benefits of power reduction without having to trade-off storage performance to get it.

For an in-depth look at all of Assureon's features, please download the Assureon product brochure at http://www.nexsan.com/products/assureon/library/Assureon_DS.pdf

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[1] Source: The Gartner Group (www.gartner.com)

[2] Source: Storage Magazine (storagemagazine.techtarget.com)

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SO FAST, RESTORE NOT REQUIRED

Information is the lifeblood to any organization, which makes recovery performance a key consideration. After determining the expense of downtime, IT professionals establish their targeted recovery window known as the Recovery Time Objective (RTO).

To recover data from tape systems, storage administrators must navigate a complex maze of hardware and software components with file systems, backup and restore applications, archive, library managers, intricate robotics, bar code readers, media managers, monitoring systems, switches, virtualization, deduplication, compression and more.

This complexity, combined with inherent unreliability and slow serial operation, makes tape a risky choice to satisfy RTO requirements for revenue-producing applications. With tape, it could take hours, days and even weeks to complete the restore, depending on the size of the data set.

In today's business environment, that kind of RTO is useless. More typical is a RTO specified in minutes or seconds, making disk the recovery platform of choice for businesses that need 24/7 access to data and cannot afford application downtime while waiting hours or days for data to be restored. Although much faster, conventional disk arrays still have to perform a separate restore process to retrieve the data, and the storage infrastructure needs to be optimized to meet specific RTO demands based on business requirements.

For the ultimate in performance, Assureon is at the top of the value pyramid. Assureon completely eliminates the need for a restore. When data is written to the Assureon archive, it automatically creates a copy of the new data, eliminating the need for an overt restore. One record is kept local, and one or more records are housed remotely. If one of the records disappear or is corrupted, Assureon discovers and fixes (or replaces) a record as a normal part of its housekeeping duties.

If disaster strikes in a traditional environment, a user doesn't have access to their files until the entire data set has been brought across the wire to restore the application. Depending on the size of the data set, that can be hours or days.

If disaster strikes in an Assureon environment, the user isn't even aware of it. If a user requests a file from the application, a pointer points to the replicated file on an offsite Assureon, which gives it bandwidth priority and serves it over the wire to the user... while transparently rebuilding the primary data set in the background. With Assureon, there is no recovery time penalty that forces applications to wait for the whole data set to rebuild. If a file is required, a file is served.

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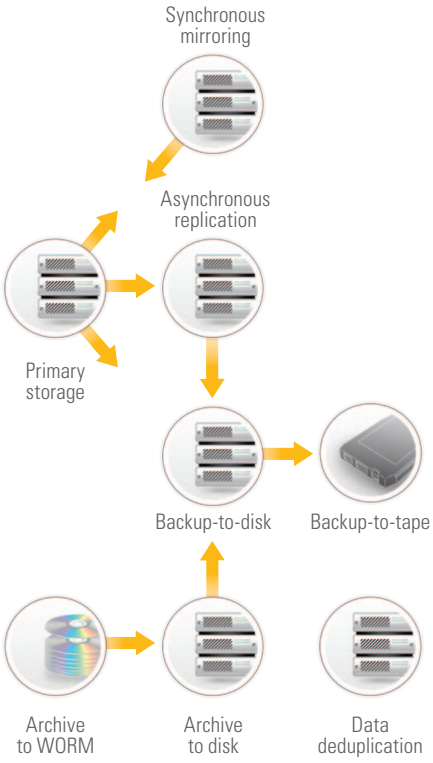

FIGURE 1
TRADITIONAL STORAGE INFRASTRUCTURE AND MANAGEMENT FLOW

Assureon is also very efficient. Because it is a Content Addressable Storage (CAS) array, it eliminates redundant data, just as data deduplication does. By reducing the data set, Assureon replication and other data movement windows are shortened dramatically.

CAS functionality is an integral part of Assureon, and it operates automatically. No separate data deduplication application needs to be bolted on.

INFRASTRUCTURE CONSOLIDATION AND AUTOMATED MANAGEMENT

Storage administrators are being asked to do more with less without increasing risk. Businesses today are challenged by unprecedented data growth without corresponding increases in IT budgets. The vast amounts of data created by an organization can overwhelm any team of storage administrators, making automated storage management an absolute necessity to effectively store, protect and recover critical business data.

Ideally, businesses need a new generation of intelligent storage systems that directly address the need for storage cost reduction, both the purchase cost of acquiring new storage hardware and software and the ongoing operating costs of managing it.

The commonly complex flow of information begins with its creation and capture, after which the management challenge begins for how it is stored, managed and protected. How complex is managing a storage infrastructure? IBM reported that studies[3] have shown over 70 percent of IT operations spending goes to maintaining and managing existing systems, instead of developing new and innovative applications. It is therefore no surprise that 77 percent of IT managers have reported their top operational priority was improving IT efficiency. The best way to achieve this is to minimize the amount of tasks to be managed and the complexity required to handle the rest. This is Assureon's approach for delivering highly efficient storage.

While tape-based systems and standard storage arrays are based on data protection models that expand and complicate storage infrastructures, Assureon drastically simplifies and automates data protection while offering more secure and higher-performing storage. With each layer of infrastructure that is consolidated, not only is there less to buy and manage, there is ultimately less exposure to risk.

[3] Source: IBM Information Systems Management and Automation

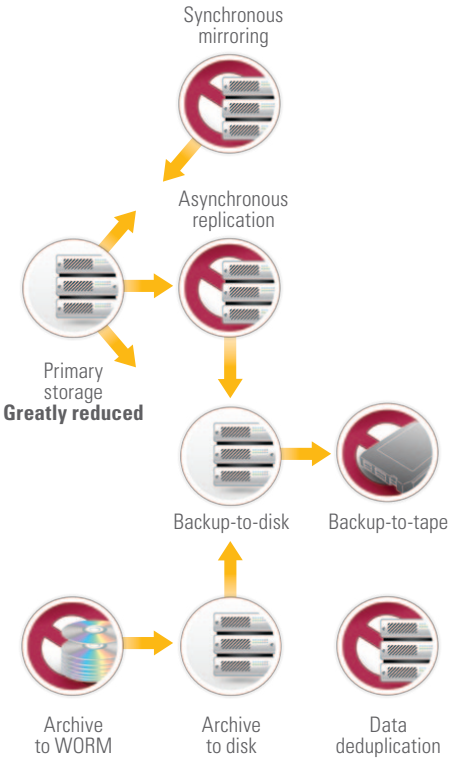

FIGURE 2
LAYERS OF INFRASTRUCTURE ELIMINATED BY ASSUREON

The broadly accepted storage management architecture adopted for many years has two major components: the first is a place to capture and manage active data; the second is the protection architecture.

Decisions long before the arrival of data are made to classify and manage data based on perceived value. Sometimes, because there isn't time to do that, data is shoved into an existing schema. The structure for the capture, classification, management, protection and performance of data is typically organized and managed in the way described in Figure 1.

The conventional model for the capture, classification, management and protection of data is built on the concept of creating extra copies of data, which, by default, involves extra layers of cost, complexity and risk for the storage infrastructure. This model is based on a series of operations including remote replication, data deduplication, backup to tape, archiving to optical disk for secure Write Once Read Many (WORM) data and, ideally, another copy of the data replicated to local storage for fast recovery.

This produces at least five additional copies of data on storage devices that rapidly expand the storage infrastructure, making it more complex to manage and more costly to deploy. Factoring tape-based cartridge rotation into this model means that up to 50 copies of data are created just to ensure reliable data recovery.

From an expense point of view, the rule of thumb is that acquisition cost accounts for 20 percent of overall expense. Each additional layer of storage adds approximately five times the expense over purchase cost. Imagine how much simpler, safer and cost efficient it would be if 66 percent of the traditional hardware and software infrastructure was eliminated, which is exactly what Assureon can do! See Figure 2.

In an Assureon environment, storage complexity is radically simplified. It boils down to this: high performance disk acts as a front-end cache for capturing and serving information for high performance applications (e.g. databases), and Assureon is used to manage EVERYTHING else to include archive, migration, protection, availability, deduplication, regulatory compliance and cost containment. Assureon is an all-in-one solution for an archive and data protection architecture — it's that simple, it's that safe.

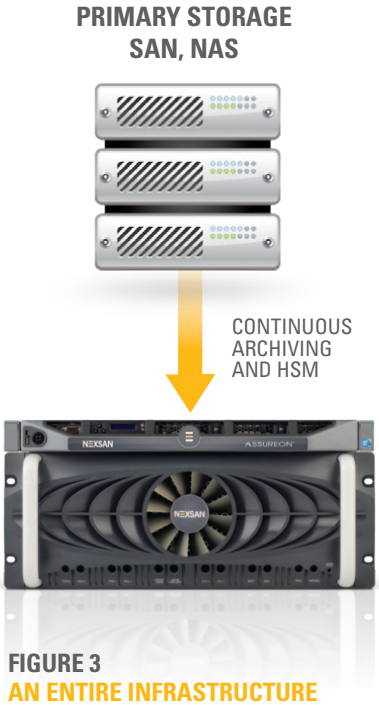

FIGURE 3
AN ENTIRE INFRASTRUCTURE IN ONE SMALL SOLUTION

- Data Deduplication
  (performed in archive)
- Backup
  unique offsite replication eliminates backup
- Restore
  zero-recovery time architecture
- Online archive
  fast WORM disks, ILM, HSM, CAS, compliance, encryption, audit trails, etc.
- Archive Mirror
  local or remote replaces tape backup

Whereas a typical storage infrastructure delivers multiple boxes, multiple interfaces and multiple prices, with Assureon, IT professionals get an entire storage infrastructure in a single, small solution. 1 box, 1 interface, 1 price.

The typical workflow of data management is very complex. In an Assureon-optimized storage environment, superfluous layers of storage are eliminated, allowing the infrastructure and management to be consolidated and simplified. See Figure 3. The result is a storage infrastructure that dramatically reduces both hard and soft costs while ultimately reducing risk.

Assureon sits behind primary storage and, among other things, acts as a Hierarchical Storage Manager (HSM) producing immediate storage simplification and cost savings. In an Assureon environment, the amount of expensive primary storage required is greatly reduced.

Assureon transparently monitors the files on primary storage looking for low-usage thresholds based on policies. As soon as a file meets a low-usage threshold, Assureon identifies and moves the file off of primary storage and onto low-cost, energy efficient disk storage. In its place, a pointer is left on primary storage so whenever the file is required, Assureon knows exactly where to retrieve it.

As you can see, the need to buy new and expensive primary disk is eliminated. Whatever expensive storage was being wasted before is now managed efficiently with Assureon. With the high performance and low cost attributes of Assureon, primary storage is merely a frontend cache to serve the most active data until usage policies determine migration of that data into Assureon's secure storage subsystem. Within Assureon, policies are implemented to determine how data is managed from capture to destruction.

Assureon enforces ILM retention and protection periods for regulatory compliance. Data that arrives in the frontend cache is automatically moved to Assureon as a shared file. Because data is in the archive, the need for synchronous mirroring is eliminated. Assureon then moves the data to a second location, which eliminates the need for an asynchronous copy. And since there is a local and a remote copy, backups are eliminated as well. Since the Assureon archive is implemented with highly available, yet low cost, energy-efficient disk, the need to have the archive on optical jukeboxes or tape is also eliminated.

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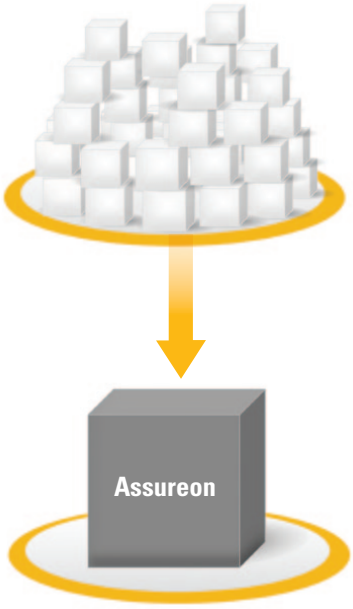
TRADITIONAL STORAGE INFRASTRUCTURE AND MANAGEMENT

Multiple Boxes.
Multiple Interfaces.
Multiple Prices.



NO MORE TIERS

One Box.
One Interface.
One Price.

CONCLUSION

Tape pundits still cling to the assertion that tape is cheaper than disk. Although the cost of media might be cheaper for tape than disk, after one considers the number of copies necessary for tape attempting to achieve acceptable levels of reliability, the costper-byte protected FAR exceeds disk. That's why cost comparisons shouldn't revolve around "bytes stored" but rather "bytes protected." When looking at performance, data reliability, management and the amount of tape required to store and protect large volumes of data, tape loses by a wide margin.

Times have changed, and tape lacks the functionality to compete given the demands of today's data protection environment. The amount of data required to store and manage in this day and age far exceeds data volumes from just 10 years ago when tape was a viable contender. Today, the critical mass of performance, reliability, compliance and cost all necessitate an efficient alternative to storing, managing and protecting growing data volumes. Substituting new layers of conventional disk arrays for tape-based systems is not a viable solution without the data protection intelligence, infrastructure consolidation and automated management that Assureon can provide.

As such, Assureon is the key game-changer and safest choice in the market today. As such, IT professionals can finally have a COMPLETE sense of assurance about their data protection, simplify their operations and drive down overall costs. For more on Assureon and what it can do for your organization, visit **www.nexsan.com** or set up a free consultation with a solutions expert by calling **866.4.NEXSAN**

ABOUT NEXSAN

Nexsan® is a leading provider of innovative data storage systems with over 10,000 customers worldwide. Nexsan's pioneering hybrid storage systems combine solid-state technologies, spinning disk storage and advanced software to deliver radical new levels of performance and capacity at lower cost. The company's advanced technologies enable organizations to optimize traditional, virtual and cloud computing environments for increased productivity and business agility. With more than 28,000 systems deployed since 1999, the company delivers its data storage systems through a worldwide network of solution providers, VARs and system integrators. Nexsan is based in Thousand Oaks, Calif. For more information, visit **www.nexsan.com.**

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