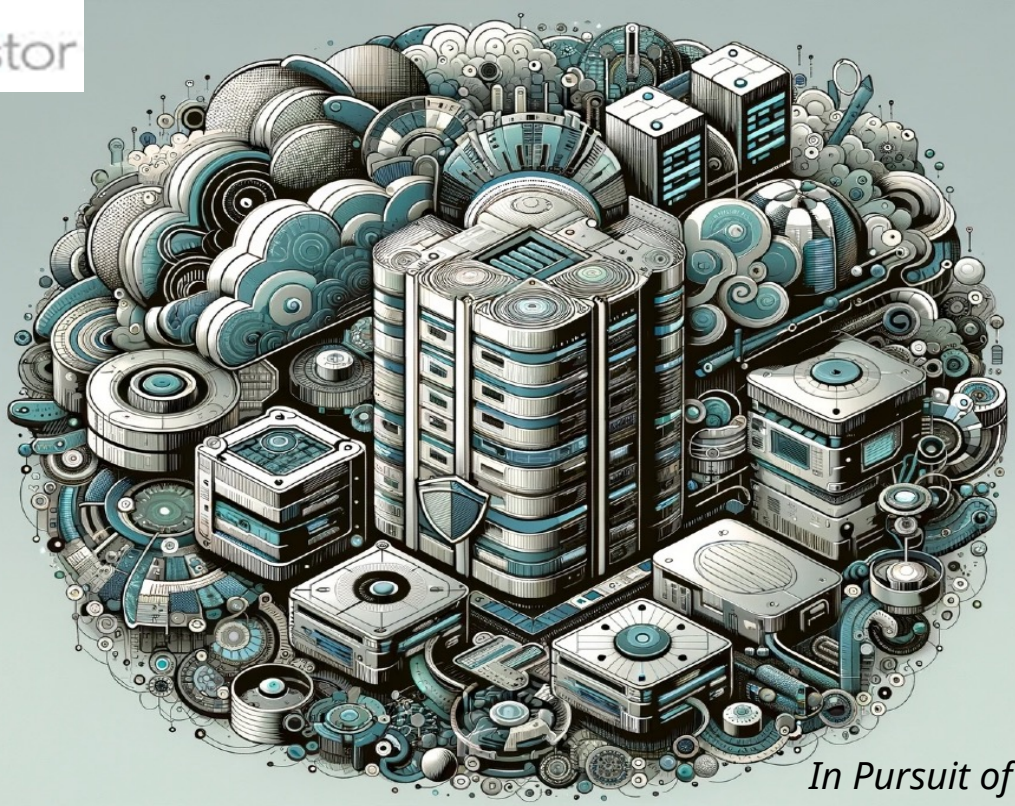


In Pursuit of Perfection

Veritas NetBackup, a leader in enterprise backup and recovery software, is designed for large-scale data centres. It offers advanced capabilities for virtual and cloud deployments that surpass conventional backups. Supporting a variety of platforms and applications, NetBackup scales with enterprise growth, integrating with the infrastructure to streamline data protection strategies. The software has received numerous patents for its innovations in backup, recovery, virtualisation, deduplication, and snapshot management, maintaining its pioneering legacy.

Advantage 01: Manage business risks

NetBackup enables swift recovery from severe business disruptions such as data loss, ransomware, and downtime. It seamlessly integrates throughout the tech stack, enhancing reliability and performance from appliances to cloud storage. With NetBackup Resiliency, businesses can recover on a large scale and bolster defenses against ransomware using immutable storage and stringent data access controls for added security.

Advantage 02: Protect any workload

Enterprise IT is known for its diversity in platforms, applications, and infrastructure, which expand with the organisation's size. NetBackup supports various environments and integrates across the infrastructure layers to centralise data protection strategies.

- Operating systems - NetBackup integrates with dozens of server operating system (OS) versions, including Microsoft Windows®, Linux® and UNIX® files.
- Virtual systems - NetBackup integrates with leading hypervisors, including VMware vSphere®, Microsoft® Hyper-V, Nutanix AHV, Red Hat Virtualisation, Docker, Azure Stack, and OpenStack.
- NetBackup seamlessly works with top relational databases and applications like IBM DB2, Microsoft Exchange Server, SQL Server, MySQL, Oracle, Oracle RAC, SAP, and more.
- SQL Self-Service allows DBAs to independently handle discovery, credential management, backup scheduling, and restoration for Microsoft SQL, as well as rapidly browse or mount databases using Instant Access.
- Universal shares - New form factor support for CIFS/NFS shares backed by MSDP storage is now available for both appliances and build-your-own (BYO) media servers.

About Kaizen Technologies For more information, visit Kaizen Technologies at: https://www.kaizentechnologies.online/about-us/

Advantage 03: Rescue your business

The unthinkable happens. Services are down, and the clock is ticking. There's no time to waste: it's time to recover from backup.

NetBackup has fast, reliable recovery options to get your systems up and running quickly.

- Instant Access - Mount and browse VMware and Microsoft SQL images using a simple, web-based user interface accessible by any user who has been granted access. These images are available directly from the MSDP storage without moving any data.

- Veritas NetBackup Bare Metal Restore - quickly prepares a physical system for restoration, eliminating the need for manual reconfiguration.

- Veritas NetBackup Granular Recovery Technology (GRT) - NetBackup Granular Recovery Technology (GRT) indexes the contents of data sources, making it easy to restore specific items without endless trial-and-error restore attempts.

Advantage 04: Resiliency of business-critical data, at scale

NetBackup is designed to strengthen an organisation's resiliency in the face of the unknown and unexpected by providing rapid recovery from catastrophic business events. Ensure recovery of business-critical data at any scale with the solution protecting the most exabytes of data worldwide. You get total, secured protection for all physical, virtual, and cloud infrastructures. NetBackup provides a comprehensive strategy to help protect, detect, and recover from disasters, malicious attacks such as ransomware, and operational failures. Gain confidence in data integrity using identity and access management, data encryption, and immutable/indelible storage security controls that help backup files remain safe and untouched from malicious invaders.

Advantage 05: Flexibility to adopt any cloud, any workload or any architecture

With unparalleled breadth and depth of support - 800+ data sources, 1,400+ storage targets and 60+ cloud providers - NetBackup provides the freedom of choice to adopt any cloud, any workload and any architecture. You can deploy NetBackup in any fashion, and it is the only solution providing the flexibility to ensure rapid recovery across hybrid, physical, virtual and multicloud environments.

Advantage 06: Meet the shrinking backup window

It's not uncommon for IT organisations to report data growth of 40−60 percent per year. To keep up, you need backups that run as fast as possible without disrupting production activity. NetBackup combines innovative design with the latest technical advancements to deliver impressive performance numbers with minimal impact.

➢Accelerator - Eliminate full backups once and for all. With NetBackup Accelerator, only changed blocks are backed up each time. These blocks are combined with previous backups to synthesize a new full backup for quick recovery.

➢Snapshots—Let the storage system run backups for you. With NetBackup Snapshot Management, snapshots are orchestrated, catalogued, and replicated using various storage technologies.

➢Agentless backup - NetBackup makes agents within VMs unnecessary for backups and restores, simplifying the deployment and maintenance of backup software across a virtual environment.

➢Automatic client updates –NetBackup can automate the deployment of this software using built-in or third-party software distribution tools for systems that use client or agent software.

Advantage 07: Prepare for Disaster Recovery

No business will survive if it keeps all its data in one place. Protect your business from natural disasters and site outages by keeping a copy off-site or in the cloud. NetBackup can help you automate DR readiness regardless of what storage or transport method you use.

➢NetBackup Auto Image Replication (AIR) - With NetBackup AIR, backup images, and catalogues are automatically replicated over a network to other NetBackup domains on-premises or in the cloud, according to preset policies.

➢Snapshot replication—Hardware snapshots can be automatically replicated to other storage systems at off-site locations, all under the control of the Resiliency Platform.

➢NetBackup Resiliency—Meeting business uptime service-level objectives (SLAs) across hybrid clouds with multiple point products and different data sources can be complicated and costly. Integrating NetBackup and the Resiliency Platform helps you proactively ensure resiliency for applications across your heterogeneous environments using near-real-time data replication and a combination of replication and NetBackup AIR with orchestrated recovery.

Using NEC HYDRAstor and Veritas NetBackup together

NEC's HYDRAstor OpenStorage Suite for Veritas NetBackup extends the functionality of Veritas NetBackup, leveraging intelligent storage system capabilities via Veritas OpenStorage API framework.

NEC's HYDRAstor grid storage platform's deep integration with Veritas NetBackup using OpenStorage Suite improves throughput, maximises storage capacity utilisation, prevents I/O bottlenecks, reduces network bandwidth consumption, and optimises overall backup workload.

Advantage 01: Dynamic I/O – Adaptive Load Balancing

Dynamic I/O enables automatic distribution of backup jobs across front-end nodes to adapt to changing workloads while optimising storage responsiveness and capacity utilisation on the backend via HYDRAstor's DataRedux inline global data deduplication capability.

Enterprises can maximise both throughput and capacity without compromising efficiency by combining the benefits of dynamic front-end load balancing with automatic inline global data deduplication and distribution on the backend.

Universal Express I/O Connectivity

Operating System	OS Version	Hardware Platform	Backup Exec			Arcserve Backup				NetWorker			
			20	16	15	r18	r17.5 SP1	r17.5	r17	9.2	9.1	9.0	8.2
Windows	2019	x64	–			✓							
	2016	x64	✓[3]	✓[3]	–	✓	✓	✓	–	–	✓		
	2012 R2	x64	–	✓[3]	✓	–	–	✓	✓	–	–	–	✓
Linux	RHEL 7.6	x64								✓	–	✓	–
	RHEL 6.9	x64								–	–	–	✓

Operating System	OS Version	Hardware Platform	NetVault Backup			Oracle RMAN			Acronis Backup & Recovery		Commvault	Veeam Backup	NAKIVO Backup & Replication	
			12.1	11.4	9.2	19c	12c	11g	12	11.7	11	9	9.1	9.0
Windows	2019	x64	–			✓[2,4]	–	–			–	–	–	–
	2016	x64	–	–	–	–	✓[2,4]	–	✓	–	✓	✓[5]	–	–
	2012 R2	x64	–	–	–	–	✓[2,4]	✓[2,4]	–	✓	–	–	–	–
Linux	RHEL 7.6	x64	✓[1]	✓[1]	–	–	✓[2,4]	–	–	–	–	–	✓	✓
	RHEL 6.9	x64	–	–	✓[1]	–	✓[2,4]	✓[2,4]	–	–	–	–	✓	✓

✓ : Verified
/ : Not supported (Backup software is not supported on the specified platform.)
- : Not verified. Please contact your local NEC sales representative.

[1] When using Universal Express I/O – Deduped Transfer, specify the backup device "SmartDisk", as "VTL" is not supported.
[2] When using Universal Express I/O – Deduped Transfer, use the backup type "backup set", as "image copy" is not supported.
[3] Universal Express I/O – Deduped Transfer does not support use with VADP integrated backup.
[4] Using Oracle RMAN Incrementally Updated Backups may result in sub-optimal performance when using with NEC Storage HS.
[5] Use of Universal Express I/O with the Synthetic Backup feature in Veeam Backup is not recommended as it is difficult to obtain optimal performance.

Advantage 02: Express I/O – Lightweight Data Transport

HYDRAstor's OpenStorage Express I/O delivers more efficient data transfer than standard protocols such as NFS, CIFS, and S3. Express I/O reduces data access overhead and maximises data throughput and performance. With Express I/O, the maximum performance maximises the efficiency of data transfer and throughput using existing 1GbE or 10GbE networks.

Advantage 03: Deduped Transfer – Source Side Dedupe

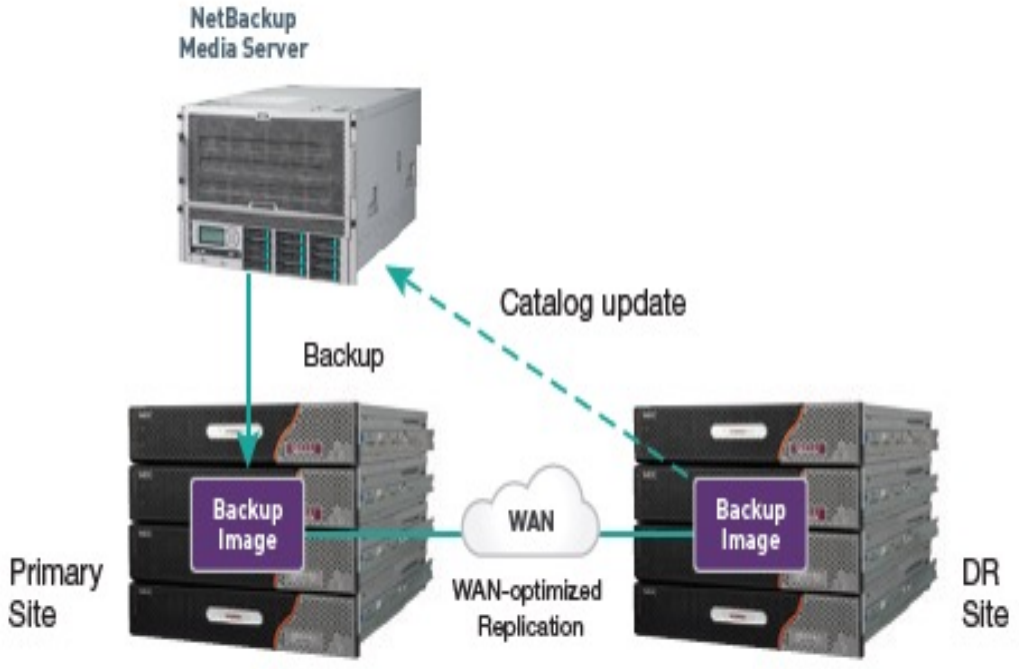
HYDRAstor's Deduped Transfer delivers 4-6 times higher performance than standard Express I/O, significantly reducing network bandwidth consumption between the NetBackup media server and HYDRAstor. Deduped Transfer leverages media server resources for data deduplication pre-processing and sends only unique chunks of data from the media server to HYDRAstor, resulting in significantly higher throughput for backup workloads. With Deduped Transfer, HYDRAstor can theoretically achieve maximum 40 TB/hr performance with a single HS8 hybrid node.

Advantage 04: Optimised Synthetics & Accelerator - Storage-Synthesised Full Backup

HYDRAstor's OpenStorage Optimised Synthetics and Accelerator extend the synthetic full backup functionality of NetBackup, minimising the backup window by offloading synthetic full backup processing to HYDRAstor. Controlled by the backup server, Optimised Synthetics synthesises a new full backup using the last full backup and subsequent incremental backups. Accelerator simplifies the process even further by automating the synthesis of the next full backup as soon as the new incremental backup is received. Optimised Synthetics and Accelerator enable the user to eliminate weekly full backups from the job schedule and maintain an up-to-date full backup image with only daily incremental backups while improving the efficiency of the backup process by reducing backup server workload and network traffic. It is important to note that all these operations are extremely fast, as they are achieved only through metadata manipulations on HYDRAstor, no data reading/copying is necessary.

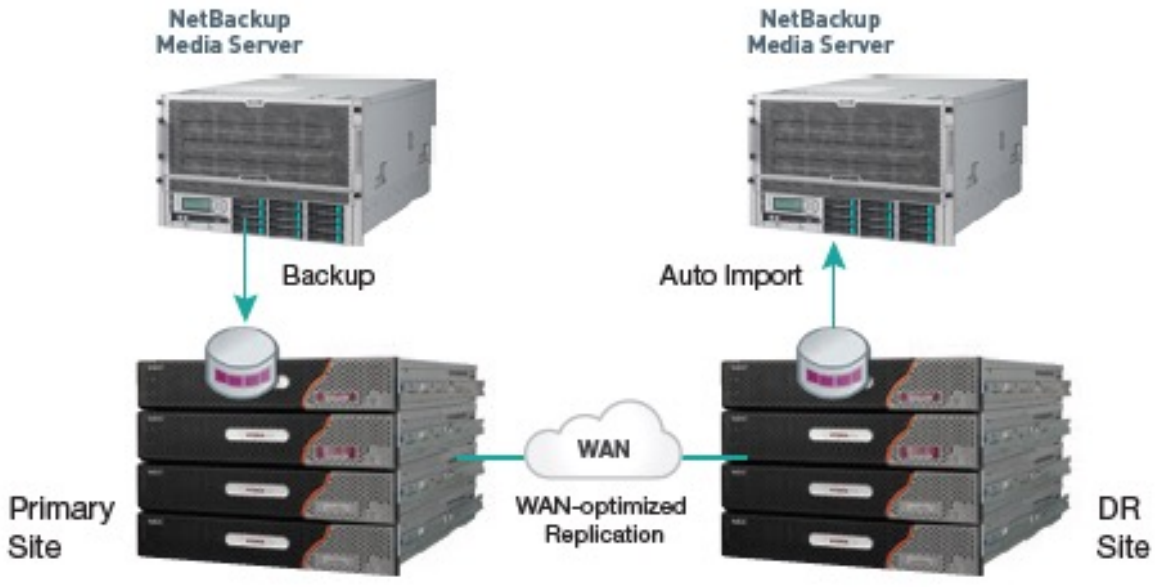
Advantage 05: Optimised Copy – WAN-Optimized Copy Services

HYDRAstor's OpenStorage Optimised Copy leverages HYDRAstor's RepliGrid WAN-optimised replication technology to copy backup images to remote systems efficiently. Optimised Copy automates the copy process and updates the NetBackup catalogue while minimising required bandwidth and simplifying administration workflows. Multiple systems can leverage Optimised Copy to aggregate disaster recovery protection to create a scalable system that improves overall productivity and efficiency. HYDRAstor's superior scalability enables the consolidation of copies from multiple sites in a single global deduplicated system for optimal capacity utilisation and administrative efficiency. With in-flight data encryption, data can be protected from unauthorised access during the transfer.



Advantage 06: OST AIR – WAN-Optimised Auto Image Replication

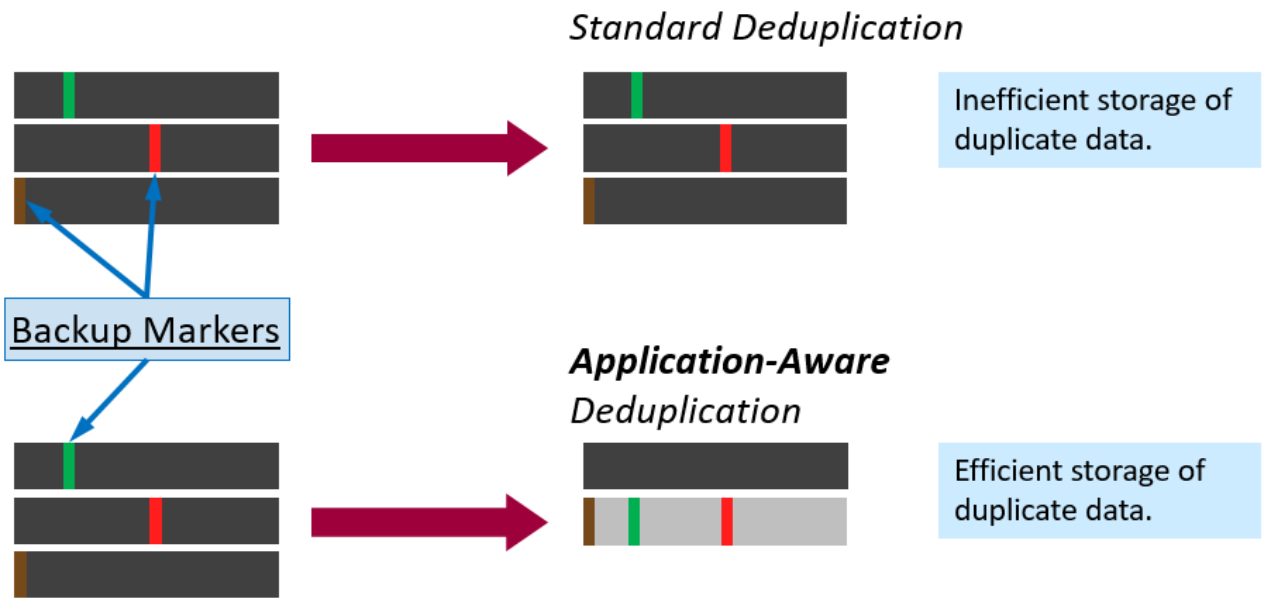
HYDRAstor's OpenStorage Auto Image Replication (AIR) replicates critical backups from the Master site to the DR site, each in a different NetBackup domain maintained by an independent NetBackup catalogue. It automates site-to-site disaster recovery by leveraging HYDRAstor's RepliGrid WAN-optimised replication technology to send unique compressed chunks of data to the remote site. Using AIR, the Backup server at the DR site automatically imports the replicated images and updates its catalogue, enabling quick recovery in case the primary site is completely lost.



Advantage 07: Marker Filtering

Veritas NetBackup can insert 'markers' (management information) into the backup data when performing backups. These markers can have an adverse effect on compression, lowering the deduplication ratio of data stored in the system.

The marker filtering feature works with supported backup software products to filter markers existing in backup data during a backup, thereby increasing data deduplication performance.



Advantage 08: Immutable and indelible data

NetBackup protects your data from encryption, modification, and deletion using WORM (Write Once Read Many) properties.

- WORM properties provide two additional levels of security for backup images:

  ➢Immutability: This protection ensures that the backup image is read-only and cannot be modified, corrupted, or encrypted after backup.

  ➢Indelibility: This property protects the backup image from being deleted before it expires, and data is protected from malicious deletion.

Configuring these WORM properties protects your data from certain malware attacks to some extent, for example ransomware.

NetBackup provides the ability to write backups to WORM storage devices so their data cannot be corrupted. Additionally, it lets you take advantage of advanced options available from your storage vendors to protect your backup data per applicable statutes.

Once the backup images are written using a WORM enabled storage unit, the data cannot be deleted until the WORM Unlock Time and it can no longer be modified. This WORM Unlock Time is set when the image is created or the image expiration period is extended.