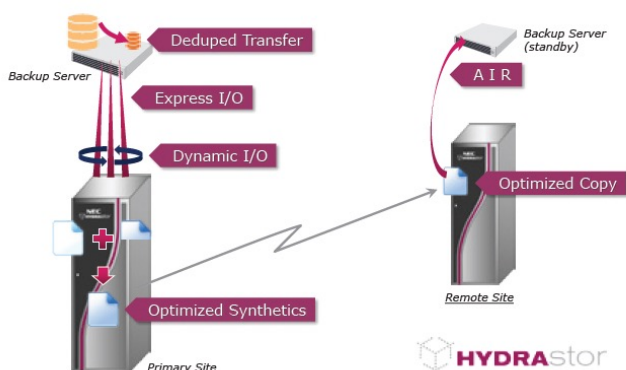


## Advanced Integration for Backup and Archive Applications

### HYDRAsstor<sup>®</sup> Advanced Data Services

*In Pursuit of Perfection*



## At a Glance

- Dynamic I/O - Adaptive Load Balancing
- Express I/O - Lightweight Data Transport
- Deduped Transfer - Source Side Deduplication
- Optimised Synthetics - Storage-Synthesised Full Backup
- Optimised Copy - WAN-Optimised Replication Services for DR

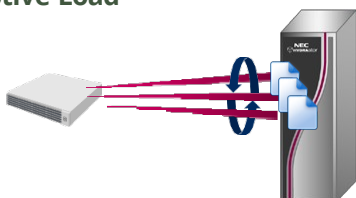
## Overview

NEC's HYDRAsstor Advanced Data Services extends the functionality of backup and archive applications, leveraging intelligent storage system capabilities via the Advanced Data Services framework.

Integrating backup and archive applications improves throughput, maximises storage capacity utilisation, shortens backup windows, reduces network bandwidth consumption and optimises off-site backup workloads.

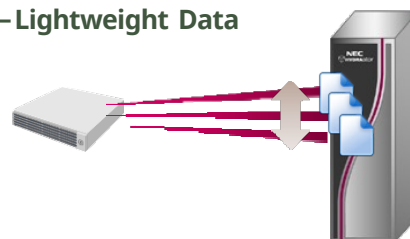
## Solution

### Dynamic I/O - Adaptive Load Balancing



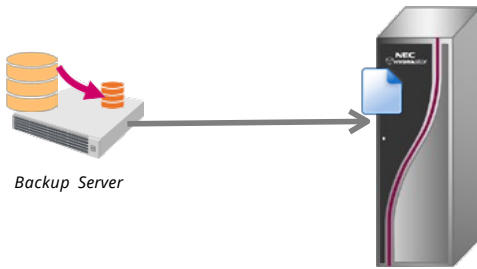
Dynamic I/O enables automatic distribution of backup jobs across front-end nodes to adapt to changing workloads while optimising storage responsiveness and capacity utilisation on the backend via HYDRAsstor's DataRedux™ inline global data deduplication capability. Enterprises can maximise both throughput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

### Express I/O - Lightweight Data Transport



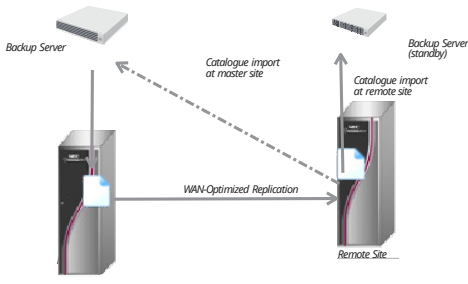
HYDRAsstor's Express I/O is a lightweight data transfer protocol that delivers more efficient data transfer than standard protocols such as NFS and CIFS. Express I/O reduces the overhead of data access and maximises backup performance. With Express I/O, backup servers can achieve maximum performance with HYDRAsstor, resulting in shorter backup windows.

## Deduped Transfer –Source Side Deduplication



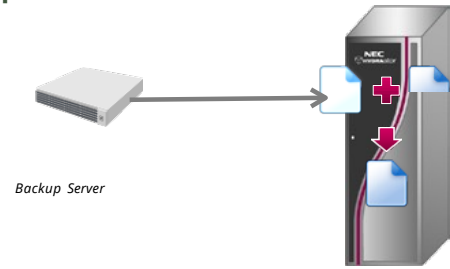
HYDRAsTOR's Deduped Transfer delivers higher performance than standard Express I/O by reducing network bandwidth consumption between the backup server and HYDRAsTOR. Deduped Transfer leverages backup server resources for data deduplication pre-processing and sends unique chunks of data from the backup server to HYDRAsTOR, resulting in significantly higher throughput for backup workloads. Deduped Transfer can let backup servers at small remote sites directly backup to HYDRAsTOR at the data centre, reducing both network and storage costs.

## Optimised Copy –WAN-Optimised Replication Services for DR



HYDRAsTOR's Optimised Copy leverages HYDRAsTOR's RepliGrid WAN-optimised replication technology to efficiently copy backup images to remote systems. HYDRAsTOR's WAN-optimised replication sends unique compressed chunks of data to the remote site. For Veritas NetBackup®, Optimised Copy automates the copy process and updates the NetBackup catalog, minimising required bandwidth and simplifying administration workflows. HYDRAsTOR also supports NetBackup Auto Image Replication (AIR) via OpenStorage API, which automates site-to-site disaster recovery. Using AIR, the NetBackup server at the DR site automatically imports the images replicated by HYDRAsTOR WAN-Optimised Replication and updates its catalogue, enabling quick recovery at the DR site.

## Optimised Synthetics –Storage-Synthesised Full Backup



HYDRAsTOR's Optimised Synthetics extends backup applications' synthetic full backup functionality, 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. HYDRAsTOR's Optimised Synthetics work with Veritas NetBackup's synthetic backup and Accelerator feature via OpenStorage API. Supporting 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 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. This reduces the workload and network traffic on the backup server and improves the efficiency of the backup process.

