

Inline Encryption for Long-term Data

# Encryption at Rest



AES 256-bit  
Inline  
Encryption

## At a Glance

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- Fast inline data encryption for data at rest
- AES 256-bit using FIPS 140-2 validated libraries
- Secure encryption key management

## Overview

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HYDRAsstor Encryption at Rest protects data against unauthorized access to lost or stolen disks or nodes, by ensuring the data is encrypted prior to being written to disk. Along with DataRedux™ high performance global deduplication, HYDRAsstor delivers secure long-term data retention that can scale to meet future needs. With Encryption at Rest, HYDRAsstor delivers high performance global deduplication, while ensuring the data is protected.

## Solution

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### Fast Inline Data Encryption

HYDRAsstor encrypts data chunks with Advanced Encryption Standard (AES) 256-bit, implemented with FIPS 140-2 validated OpenSSL libraries.

HYDRAsstor ensures data is encrypted prior to being written to disk, delivering high performance and security. Encrypting only unique compressed chunks, HYDRAsstor minimizes encryption overhead and maximizes throughput.

### Secure Encryption Key Management

HYDRAsstor Encryption at Rest provides secure and reliable encryption key management. The encryption keys are automatically generated by the HYDRAsstor system, based on passphrases provided by the user. The encryption keys are stored in the Storage Nodes, and they are also encrypted by another key stored in the Hybrid Nodes. HYDRAsstor decrypts the encryption keys in the Storage Nodes during system startup and references the decrypted keys out of system memory, ensuring the decrypted keys are not persisted to disk.

### Support for Long-term Data Retention

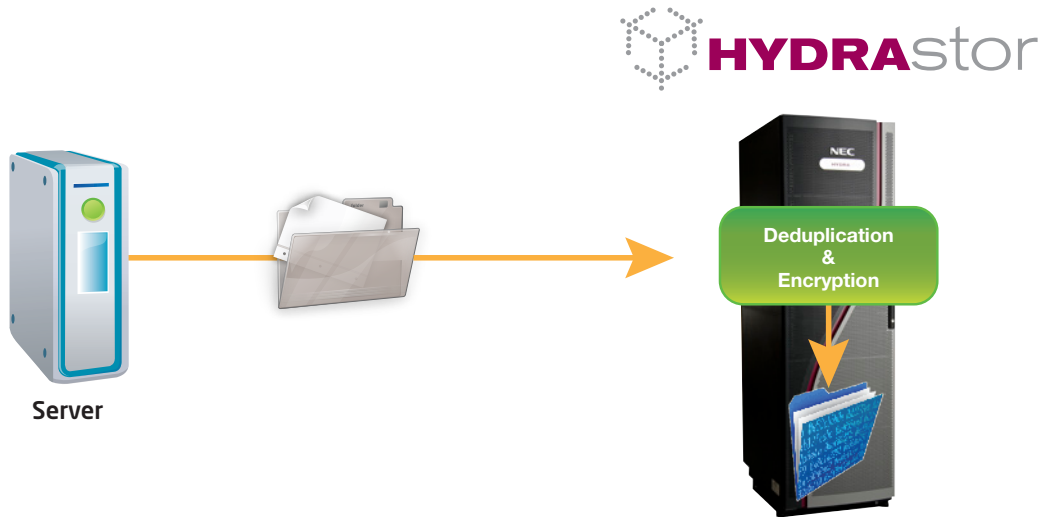
HYDRAsstor RepliGrid™ WAN-optimized replication maintains the attributes of underlying data, as well as offers the ability to protect the data from unauthorized access during transfer. With in-flight encryption, RepliGrid offers the ability to automatically encrypt the data at originating site, and decrypting it at the destination site. A data that is encrypted with HYDRAsstor Encryption at Rest or protected with HYDRALock™ (WORM) retains those attributes and protection levels for the replicas, ensuring secure long-term data retention.

### Easy Deployment and Management

Encryption at Rest functionality can be enabled via a software license at a per Accelerator Node granularity, and can be activated for any application during corresponding file system creation. Encrypted and non-encrypted file systems can be intermixed in the same HYDRAsstor system, delivering extreme flexibility and manageability for data chunks written via CIFS, NFS, or Express I/O. HYDRAsstor provides a web-based GUI administrative console and a scriptable CLI via SSH and RSH, automating configuration and reducing management overhead.

## HYDRAsstor Encryption at Rest Features and Benefits

	Features	Benefits
<b>Fast inline data encryption</b>	Encrypts data chunks with AES 256-bit prior to storing on disk.	Prevents unauthorized access to data on lost, stolen or broken disks and nodes.
<b>Secure encryption key management</b>	Encrypts the encryption key in the disks and allocates the decrypted encryption key in system memory.	Protects the encryption key from unauthorized access.
<b>Support for long-term data retention</b>	RepliGrid™ WAN-optimized replication and HYDRALock™ (WORM)	Retains the attributes and protection level at primary, remote, DR site and Cloud.
<b>Easy deployment and management</b>	Enables encryption with license activation and provides easy management and monitoring.	Deploys encryption functionality into existing HYDRAsstor systems easily and simplifies administration.



## HYDRAsstor: Scale-out Global Deduplication Storage for Backup and Archive

HYDRAsstor is NEC's massively scalable distributed grid storage platform, built to modernize storage infrastructure and support long-term data retention. HYDRAsstor has been architected to maximize capacity optimization and modular scalability, without the complexity and inherent limitations of legacy storage solutions such as expensive inefficient primary storage, limited scale-up NAS, virtual or physical tape, or specialized single-purpose backup or archive appliances. Pioneered by NEC, a Global 500 company and worldwide technology leader, HYDRAsstor provides user configurable, integrated data management services to streamline storage management.

## HYDRAsstor Features and Benefits

- Lower storage capacity consumption by up to 95% or more with inline global data deduplication.
- Reduce network bandwidth by up to 250:1 or greater, enabling cost-effective disaster recovery
- Shrink backup windows by aggregating data protection resources
- Minimize storage management costs by automating tasks and provisioning

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