

## Permabit Deduplication 2.0 Powered by Scalable Data Reduction™ (SDR)



*First generation deduplication technology attempted to just solve a backup issue. Permabit Deduplication 2.0, powered by Scalable Data Reduction (SDR), addresses the real storage management problem — optimizing your entire storage environment.*

### Permabit Delivers Advanced Data Deduplication To All Data

Permabit's SDR technology combines high performance data deduplication with traditional compression techniques. Permabit's massively scalable deduplication approach identifies segments of data within incoming data streams that are duplicates of segments already stored. Instead of storing additional redundant copies of these segments, Permabit stores additional references to the existing copies. Traditional compression techniques then compress any remaining segments before data is stored to disk.

Permabit's deduplication technology is much more effective than traditional data deduplication techniques alone because it compares new incoming data with a complete history of all previously stored data.

#### SDR and Snapshots

SDR also enables fast and efficient data snapshot capabilities. Permabit snapshots can be later used to access information that may have been inadvertently deleted from an active Permabit volume. Snapshots of a volume are created automatically at scheduled intervals or can be triggered manually by an administrator.

#### SDR and Replication

SDR is also utilized within Permabit's replication technology. This allows replication to be optimized for a Wide Area Network (WAN) by only transmitting unique data that doesn't already exist at the destination storage grid. The access nodes compare digital fingerprints across sites and if there is a match, the data is not sent over the wire, only a pointer is updated. This reduces the total amount of data that needs to be transmitted making replication very efficient and reduces line costs.

#### Permabit SDR Features

- **Built-in:** SDR is a standard feature in both the Data Center and Business Series product lines. There are no additional licenses, software, or hardware to purchase.
- **Massively Scalable:** Patented technology allows SDR to scale across an entire storage grid making Permabit Enterprise Archive the most scalable data deduplication-based archive in the industry.
- **In-line Deduplication:** Data is deduplicated in-line and real-time allowing for data to be written directly to the storage nodes. This technique saves storage space because you don't need to cache the information and process it afterwards.
- **Sub-file Level Deduplication:** Sub-file level deduplication provides a much higher reduction rate than file-based single instance storage technologies.
- **Secure Digital Fingerprinting:** Deduplication leverages the highest standard SHA-256 hashing algorithm, avoiding potential hash collisions that can be found in commonly used MD5 and SHA-1 hashing algorithms.
- **Compression:** Compression can be enabled to further reduce the storage footprint.
- **Replication:** SDR is utilized within Permabit's replication technology providing a WAN optimized solution that eliminates replicating redundant data.
- **Snapshots:** SDR is leveraged within Permabit's snapshotting technology allowing for thousands of snapshots to be taken while only consuming a fraction of the storage that the original data set required.

#### Key Benefits

- Store massive amounts of data in a fraction of their original storage footprint. This can drive effective cost per gigabyte to be less than \$1.
- Reduce data center storage footprint by storing more data in less physical space.
- Save money by delaying incremental primary storage purchases. By archiving static data to the Permabit Enterprise Archive™ and reducing the overall storage footprint, primary storage purchases can be delayed for potentially years.
- Reduce power requirements by storing more information on less spinning disks.
- Reduce the amount of archive data being replicated for disaster recovery.
- Allows for snapshots to be taken on a regular basis without consuming massive amounts of storage.

*"Permabit provides a massively scalable storage array that is targeted at the archive market...Also included is robust block-level deduplication for optimizing storage capacity. The scalable data reduction (SDR) technology combines traditional compression techniques with subfile deduplication, resulting in substantial space savings for redundant data."*

— Excerpt from  
Cool Vendors in Archiving  
2009 Gartner Report

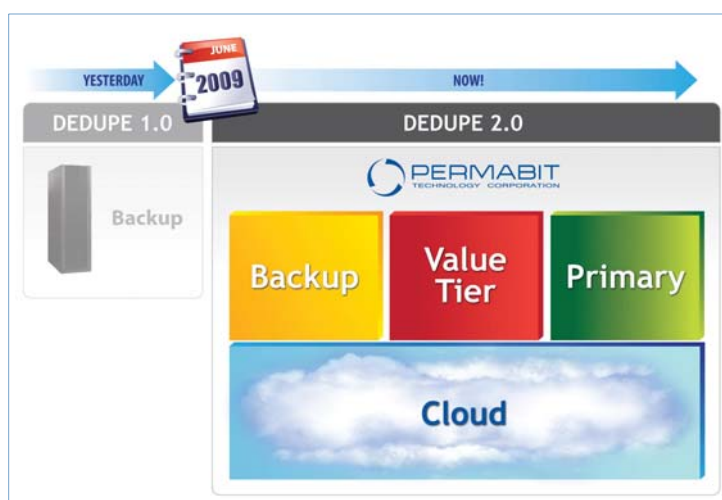
### Permabit Dedupe 2.0 Goes Beyond Backup

- Intelligent deduplication solution that adds value across the entire storage environment.
- Leverages a patented distributed index to allow massive scalability well beyond Dedupe 1.0.
- Delivers immediate value with the industry's most advanced DeDupe 2.0 Value Tier storage solution.

The Permabit Way	The Other Way
<b>DeDupe 2.0</b> — Applies to all data.	<b>DeDupe 1.0</b> — Applies to just backup
<b>In-line Deduplication</b> — No additional disk space required and no de-dupe window needed.	<b>Post-processing Deduplication</b> — Requires disk staging area to hold data until it is processed for deduplication. Also, requires off-line window to process information.
<b>Sub-file Deduplication</b> — Reduces duplicate information at the block level allowing for higher deduplication rates.	<b>File-level Single Instance Storage</b> — Reduces duplicate information at the file level resulting in much lower “deduplication” rates.
<b>Massively Scalable</b> — Grid architecture allows deduplication to scale to hundreds of terabytes.	<b>Not Scalable</b> — Index databases limit scalability to maximum of tens of terabytes.
<b>Secure</b> — Leverages SHA-256 hashing algorithm to prevent against collisions during digital fingerprinting.	MD5 and SHA-1 — Known security threats already exist allowing for hash collisions jeopardizing data integrity.

*“Today we see the need for deduplication to evolve beyond the backup use case, which was tailor made for Dedupe 1.0. The real need in the new era of Dedupe 2.0 is a technology that can address scalability, security, performance and reliability concerns as it advances up the storage tier stack to deliver a ubiquitous storage solution.”*

— George Crump  
President & Senior Analyst  
Storage Switzerland



**Figure 1:** Permabit’s Dedupe 2.0 delivers the benefits of data deduplication across the entire storage environment. Powered by Scalable Data Reduction (SDR) technology, Permabit is able to combine high performance in-line data deduplication with traditional compression techniques without the need for any separate licenses, software, or additional hardware.

### Use Case Scenario: Global Healthcare Company

A 120+ year old global healthcare company is a leader in discovering new medicines and nutritional supplements, new technologies, and new ways to manage health. They faced growing challenges surrounding securely retaining growing volumes and types of data that were essential to its products. They began looking at new ways to better manage long-term data retention. Due to the sensitive nature of this data, a secure and reliable archive was needed that could cost-effectively scale to accommodate expected increases in data volumes. They turned to Permabit to implement a strategic enterprise data archiving strategy to help reduce costs and corporate risk.

#### Permabit’s Enterprise Solution

Permabit Enterprise Archive™ now handles data associated with 13 different applications, including, email records, audited web logs, document management system data, virtual server images, and other records needed for compliance. Permabit was able to drastically reduce not only the primary storage volumes, but once archived, the built-in data deduplication feature further reduced storage volumes in the Permabit archive. The company freed up capacity on their most expensive primary storage while retaining disk-speed access to data in the Permabit archive.

Permabit delivered fast, meaningful benefits to users across the organization including:

- Dramatically lowered primary storage costs
- Reduced storage requirements by nearly 40%
- Archive leveraged far beyond the initial archiving project
- Reduced corporate risk associated with legal discovery and intellectual property protection
- Achieved ROI in less than 3 months

### Find out More

Contact Permabit today to discover how Permabit can help you meet your storage and archiving challenges. Call us at 617.252.9600, contact your local Permabit partner, or view our solutions at [www.permabit.com](http://www.permabit.com)

### About Permabit

Permabit delivers next generation disk-based value storage solutions that dramatically reduce primary storage costs by greater than 10 times. With industry leading patented technology, Permabit provides massively scalable data deduplicated disk storage solutions that cost a fraction of what it takes to manage tape or optical storage, with advanced data protection and reduction technologies that offer decades of reliable online information access. Permabit is Gartner’s 2009 “Cool Vendor of the Year” in Archiving.



Ten Canal Park  
Cambridge, MA 02141  
Phone: 617.252.9600  
FAX: 617.252.9977

[info@permabit.com](mailto:info@permabit.com)  
[www.permabit.com](http://www.permabit.com)

