



HYBRID STORAGE **SOLUTIONS**

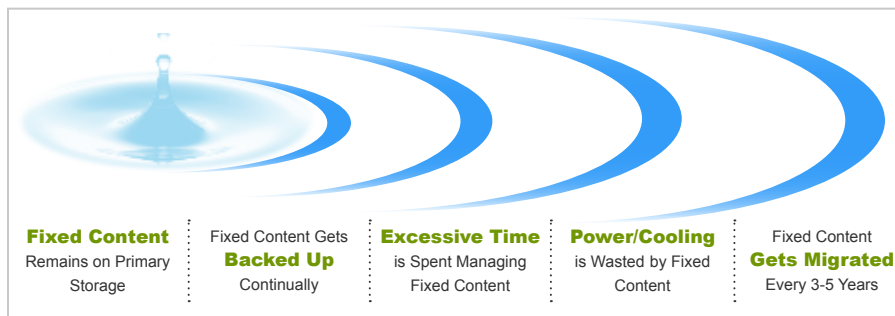


NOW IS THE TIME FOR HYBRID STORAGE

CORPORATIONS ARE EXPERIENCING AN UNPRECEDENTED COMBINATION OF DATA GROWTH, ECONOMIC PRESSURE, AND REGULATORY COMPLIANCE. MANAGING STORAGE COSTS AND MEETING SERVICE LEVELS IS BECOMING INCREASINGLY DIFFICULT WITH CURRENT DISK- AND TAPE-BASED SOLUTIONS.

THE RIPPLE EFFECT

Fixed content, also known as persistent data, is the largest and fastest growing data type in the enterprise. Leading analysts estimate that it accounts for as much as 80% of unstructured data and is growing at approximately 100% CAGR. This data is not changing, not mission critical, and infrequently accessed; however, much of the data must be retained and retrieved quickly to satisfy increasing regulatory and legal requirements. In order to meet the online requirements, fixed content remains intermingled with production data on expensive primary storage arrays and is the culprit behind a myriad of inefficiencies that are rippling through data centers worldwide.

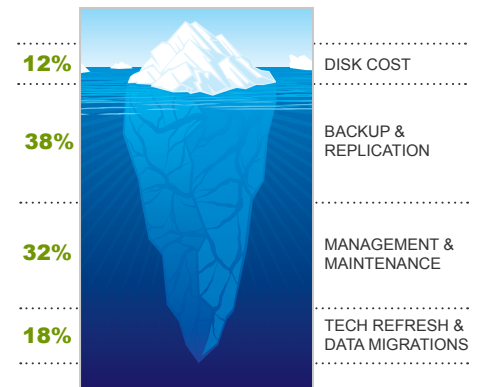


UNIQUE REQUIREMENTS

Disk-based systems offer online accessibility, but are expensive to operate, need to be backed up, and require expensive data migrations every 3-5 years. Tape-based systems can be cost-effective to purchase, but don't offer online accessibility, require regular maintenance, and deliver questionable reliability. Fixed content has unique requirements that demand a fresh approach that bridges the gap between disk and tape.

THE STORAGE TAX

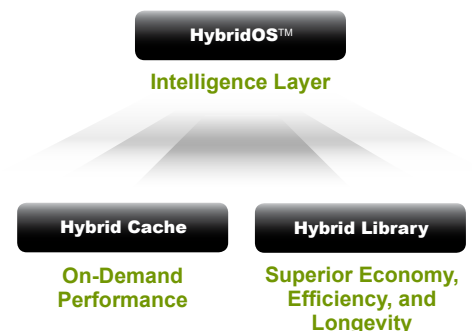
Compounding the intensity of the ripple effect is a principle called the Storage Tax. The Storage Tax represents the actual cost of every incremental gigabyte of disk storage that is brought into a data center. As the figure below illustrates, the initial acquisition cost (which is often the sole criteria analyzed in a storage purchase) represents only a small percentage of the total storage cost.



Sources: ESG, The Clipper Group, The InfoPro

HYBRID STORAGE

The notion of hybrid is simple: performance when you need it, economy when you don't. By virtualizing multiple underlying storage technologies with an intelligent file system, PowerFile offers the performance of disk, the economy of tape, and superior reliability and longevity in a purpose-built platform optimized for the long-term storage of fixed content.



PERFORMANCE	ECONOMY & EFFICIENCY	LONGEVITY
<ul style="list-style-type: none"> High Rate of Ingestion Random Request Handling Short Time to Data 	<ul style="list-style-type: none"> High Density Low Management Overhead Low Power Consumption 	<ul style="list-style-type: none"> Resilient Media Forward / Backward Compatibility High Data Integrity



HYBRID STORAGE APPLIANCE

POWERFILE'S HYBRID STORAGE APPLIANCE™ (HSA) COMBINES THE BENEFITS OF HYBRID STORAGE WITH ENTERPRISE-GRADE PERFORMANCE, DENSITY AND SCALABILITY, MAKING IT AN IDEAL SOLUTION FOR LARGE ORGANIZATIONS AND CORPORATE DATA CENTERS.



KEY METRICS

SYSTEM SCALABILITY	25TB - 1.2PB
RACK DENSITY	500TB
POWER CONSUMPTION	4 WATTS/TB
THROUGHPUT	UP TO 375 MB/SEC
FILE REQUESTS FROM ARCHIVE GRID	UP TO 30,000 / HOUR

UNMATCHED RELIABILITY

The Hybrid Storage Appliance uses disk for performance caching and leverages industry standard Blu-ray™ media with a 50 year life for storing fixed content. This allows the HSA to completely avoid the risk of storing valuable fixed-content for many years on volatile magnetic media. PowerFile developed the patent-pending Extended Verification And Self-healing Technology (EVASt™) to make Blu-ray reliable for the enterprise. EVASt establishes a new standard for data integrity by delivering a 100x improvement over RAID 6 with less than 10% penalty to usable capacity.

Intelligent file system seamlessly manages data between performance cache and virtualized archive grid

Dedicated platform eliminates inefficiencies associated with storing fixed-content on expensive primary storage

Distributed processing architecture sustains up to 375MB/s of ingestion into cache and supports up to 30,000 file requests/hour from archive grid

GREEN TECHNOLOGY

The Hybrid Storage Appliance offers the Industry's best combination of density, energy efficiency, and raw-to-usable capacity by delivering up to 500TB in a standard 42U rack, consuming less than 4 Watts per TB, and offering a fixed 90% raw-to-usable capacity.



Data center optimized design supports up to 500TB in a standard 42U rack and scales from 25TB to 1.2PB per system

Patent-pending EVASt™ data integrity scheme offers 100x improvement over RAID 6 with less than 10% capacity overhead



DATA CENTER READY

By leveraging quad-core processor technology, intelligent disk-based caching, and a distributed processing architecture that efficiently scales both capacity and performance, the HSA is able to ingest data at 375MB/s and handle up to 30,000 file requests per hour from the archive grid all while using less than 10% of the energy required for a disk-based archive solution.

The Hybrid Storage Appliance offers up to 1.2PB per system with a distributed architecture that scales performance with capacity. Ease of management is inherent throughout the design and includes key features such as file-level WORM capabilities, thin provisioning, retention management, volume replication, and automated monitoring with integrated SNMP and e-mail notification.

Combines intelligent power management techniques with inherently low power storage technologies to deliver an industry-leading 4 Watts per TB



ACTIVE ARCHIVE APPLIANCE

THE ACTIVE ARCHIVE APPLIANCE™ (A3) DELIVERS AN UNPARALLELED COMBINATION OF DENSITY, PERFORMANCE, AND ENERGY EFFICIENCY TO SMALL AND MEDIUM-SIZED ORGANIZATIONS AT AN AFFORDABLE PRICE.



KEY METRICS

SYSTEM SCALABILITY	4TB - 240TB
RACK DENSITY	280TB
POWER CONSUMPTION	1.5 WATTS/TB
THROUGHPUT	UP TO 60 MB/SEC
FILE REQUESTS FROM ARCHIVE GRID	UP TO 3,000 / HOUR

NEARLINE ACCESS / LOW TCO

An intelligent file system integrates multiple storage technologies - providing the ideal blend of performance and economy

Systems scale from 4TB to 280TB per standard 42U rack and can be fronted by up to 34TB of high performance cache

Consumes as little as 300 Watts per standard 42U rack

Supports CIFS, NFS, and HTTP protocols - ideal for mixed environments

Patent-pending error correction improves data integrity by six orders of magnitude (10^6) for better reliability than RAID 6

Volumes can be replicated locally or over a Wide Area Network (WAN) with the optional Touchless DR™ feature

Optional, adaptive, in-line data reduction software reduces data footprint up to 7x to maximize rack density

Primary storage systems are optimized for performance and ideal for environments with dynamic content and frequent transactions. Disk-based nearline storage systems offer attractive price/performance for less frequently accessed data, but do not address high operational costs over time. The A3 was designed from the ground up for less frequently accessed fixed content and therefore offers nearline access to information at a total cost of ownership (TCO) that is 1/10th that of a comparable disk-based system.



MAXIMUM EFFICIENCY

By delivering over 700TB per Kilowatt and consuming as little as 300W per standard 42U rack, the A3 uses less than 5% of the power required for disk-based solutions and 25% of MAID solutions making it easily the most energy efficient storage solution in the industry.

Efficient use of data center floor space is just as important as low power and cooling requirements. The A3 makes sure your company utilizes every square foot of your valuable data center by delivering up to 280TB per standard 42U rack.



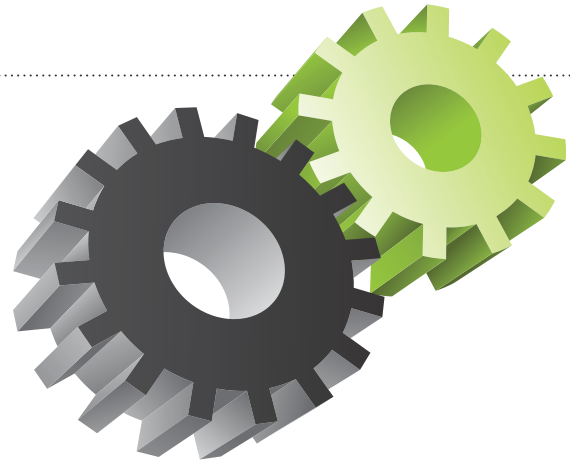
INVESTMENT PROTECTION

In addition to extensive qualification of archive-grade media, PowerFile has developed its patented Extended Verification And Self-healing Technology (EV-AST™) to create a storage system that is 100 times more reliable than enterprise tape or dual parity RAID 6.

Also, the A3 leverages standard network protocols along with standard data and media formats to help you avoid costly vendor lock-in and ensure long-term data accessibility and portability.

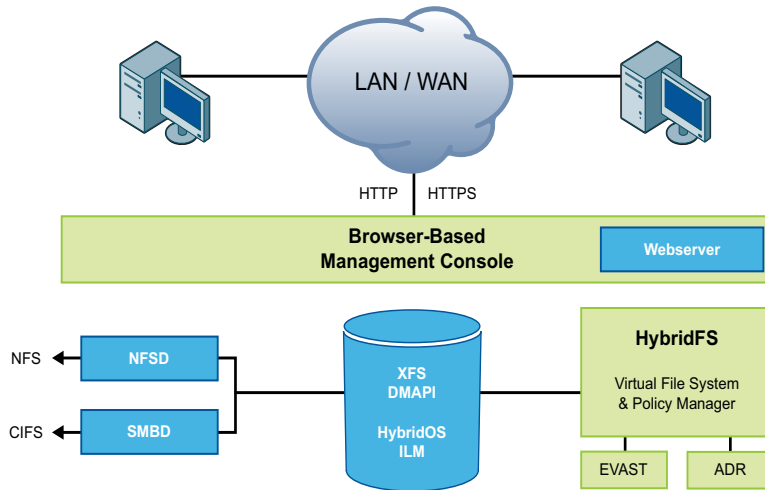
HYBRID OS™ IS THE CORE OF POWERFILE'S EVOLVED STORAGE APPROACH. IT PROVIDES VIRTUALIZATION AND DATA MANAGEMENT CAPABILITIES THAT ENABLE HYBRID PRODUCTS TO KEEP PACE WITH STORAGE INNOVATION AND THE CHANGING DATA LANDSCAPE.

HYBRID OS MANAGEMENT SOFTWARE



PURPOSE BUILT

HybridOS is designed for long-term storage and virtualizes high performance cache and Blu-ray discs into dynamic volumes that are accessed via standard network protocols (CIFS, NFS, HTTP). Administration is simple and straightforward with browser-based management, SNMP support, and non-disruptive scaling. HybridOS also incorporates dynamic features such as thin provisioning, distributed processing, and retention management to enhance usability and system performance.



DATA INTEGRITY

HybridOS leverages PowerFile's Extended Verification And Self-healing Technology (EVASt™) which is designed to improve upon the standard Blu-ray error correction and, ultimately, provide data integrity rates superior to those of other archiving alternatives – allowing organizations to migrate their valuable data to a PowerFile appliance with confidence that it will be protected and available when needed.

By implementing a patent-pending combination of spatial protection and verification, EVASt delivers a calculated data integrity rate that is 100 times better than enterprise RAID 6 while requiring less than 10% overhead.

PLATFORM SYNERGY

HybridOS is the “transmission” of PowerFile’s hybrid storage model. It is the intelligence layer that controls appliance operations and creates the synergy between the back end storage platforms.



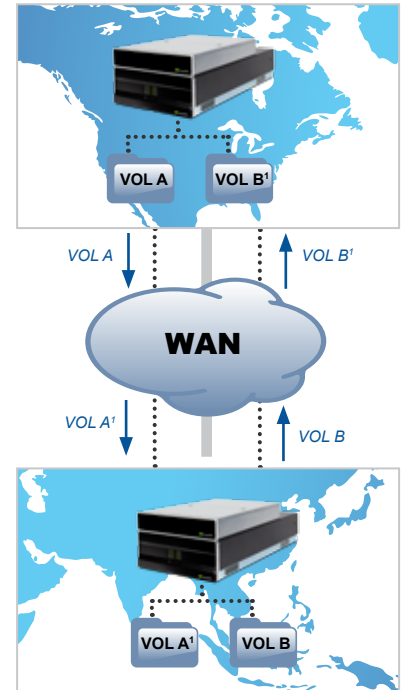
KEY FEATURE	CUSTOMER BENEFIT
Standard Network Access	Supports access through CIFS, NFS, and HTTP for seamless integration into any environment
Browser-Based Management	Simple, straightforward administration from any PC with a network connection
SNMP Support	System operations can be monitored through standard SNMP tools
Non-Disruptive Scaling	Systems can be expanded without impacting operations
Thin Provisioning	Capacity can be allocated as needed to ensure maximum resource utilization
Distributed Processing	Allows systems to scale without impacting overall performance
Retention Management	Eases data management and compliance operations

TOUCHLESS DR WAN-BASED REPLICATION

POWERFILE'S TOUCHLESS DR™ WAS DESIGNED FOR ORGANIZATIONS THAT HAVE STANDARDIZED ON REMOTE MIRRORING TECHNOLOGIES FOR ENSURING ACCESS TO CRITICAL DATA IN THE EVENT OF A DISASTER.

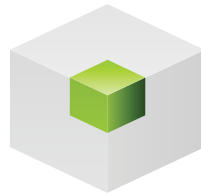
AUTOMATED DATA PROTECTION

By automatically replicating fixed-content from a local to a remote PowerFile appliance, Touchless DR reduces both risk and management complexity while maintaining quick access to archived information in the event of a disaster.



KEY FEATURE	CUSTOMER BENEFIT
Asynchronous	Improves replication performance over long distances
Active-Active	Supports cross-replication of volumes for rapid recovery of archived data
Encryption	Strong AES 256-bit encryption ensures the secure transmission of sensitive data
Bandwidth Throttling	Provides variable control of network bandwidth to avoid impacting critical applications
Flexible Scheduler	Performs replication jobs during off-peak or non-production hours

ADAPTIVE DATA REDUCTION CAPACITY OPTIMIZATION SOFTWARE



ADAPTIVE DATA REDUCTION™ (ADR) SOFTWARE IS DESIGNED SPECIFICALLY TO COMPRESS RAW, UNSTRUCTURED FILE DATA – MAKING IT PERFECTLY SUITED FOR FIXED CONTENT AND ARCHIVE DATA SETS.

STORE MORE / USE LESS

Unlike resource-intensive deduplication products that only achieve attractive reduction rates on highly redundant backup data, ADR leverages adaptive compression algorithms that perform variable bit level intra-object deduplication to reduce the data footprint by up to 7x, allowing customers to further augment PowerFile's industry-leading density and energy efficiency.

KEY FEATURE	CUSTOMER BENEFIT
Improved Density & Energy Efficiency	Reduces the data footprint by up to 7x, delivering more storage and less power per 42U rack
In-Line File Analysis	Analyzes data and only compresses files that will yield significant space savings
Active CPU Monitoring	Leverages excess process overhead to ensure no impact on performance
Partial File Decompression	Retrieves and decompresses only the portion of the file that is currently required by the application, minimizing file access latency
Optimized for Touchless DR	Data is compressed prior to being replicated over a WAN, reducing network traffic
Client-Based Decompression Utility	Guarantees the portability of compressed discs

ARCHIVE FACILITATOR™ SEAMLESSLY INTEGRATES WITH THE HSA AND A3 TO DELIVER DATA DISCOVERY, CONTEXTUAL CLASSIFICATION, AND AUTOMATED ARCHIVING.

ARCHIVE FACILITATOR CLASSIFICATION & MOVEMENT TOOL



AGENTLESS DISCOVERY

Archive Facilitator uses a non-disruptive approach for discovery of fixed-content on expensive primary storage that does not require installing agents and can be scheduled for non-production hours. In addition to full support for NAS, Windows, and UNIX/Linux platforms, Archive Facilitator is fully integrated with NetApp® and EMC® Celerra®.

AUTOMATED ARCHIVING



Archive Facilitator has the ability to classify and prioritize data based on key attributes including: capacity thresholds, frequency of access, last time modified, age, size, type, or location. For large scale environments with multiple storage platforms, Archive Facilitator can implement global policies across all primary storage to further simplify classification management. Once fixed content has been identified and prioritized, Archive Facilitator's policy engine offers flexible migration options, each of which preserve critical file-level security (ACL) attributes:

- **Tag Migration** - Provides transparent access to archived data by placing a small tag file on primary NetApp and EMC storage. Requests for archived data initiate a recall operation that automatically restores the file to its original location.
- **Link Migration** - Provides transparent end user access to archived data by placing a shortcut (Windows) or symbolic link (UNIX/Linux) on primary storage. Requests for archived data are automatically redirected to the PowerFile appliance.
- **Relocation** - Archived data is accessed directly from the PowerFile appliance.

EASY ADMINISTRATION

Browser-based management is fully integrated with the HybridOS™ management software to allow a single, remote administration console for controlling all archiving activities. The Archive Facilitator employs wizard-based functionality to further simplify system setup and policy administration.

CERTIFIED APPLICATION

In addition to full integration with NetApp and EMC APIs, Archive Facilitator is also certified with major anti-virus and backup software (McAfee®, Norton®, TrendMicro®, CA®, VERITAS®, Legato®, and Tivoli®) to smoothly integrate with existing processes and avoid unintended recalls of archived data.

KEY FEATURE	CUSTOMER BENEFIT
Plug-And-Play Appliance	Includes all required hardware and software for seamless integration
Integrated Archiving Solution	Combines discovery, classification, and automated archiving into one unified solution
Transparent Data Access	End user and application requests for archived data are automatically and non-disruptively redirected to the HSA or A3
Contextual Classification	Provides flexible grouping and prioritization of data based on several key metadata attributes
Policy-Based Archiving	Automates archiving from primary storage to the HSA or A3 with an event-driven policy engine
Third Party Integration	Fully integrated with NetApp and EMC APIs
Enterprise Scalability	Scans and manages up to 100 million files per appliance and up to 2 billion files per enterprise deployment
Unlimited Filer Scanning	Significantly lower overall costs than solutions that charge by storage capacity being scanned
Agentless Implementation	Non-invasive and does not degrade server performance

ABOUT POWERFILE

PowerFile Inc. is the leader in hybrid storage appliances for long-term storage of digital content and assets. The company's award-winning solutions combine the speed and simplicity of online access with better economics and integrity compared to traditional storage solutions, empowering organizations of all sizes to efficiently manage, secure, and preserve valuable digital assets. PowerFile's product offerings combine intelligent storage management software and sophisticated file management with cost-effective, robust hardware to deliver integrated, active, easy-to-use solutions.

Customers and Partners

PowerFile's impressive list of world-class customers have deployed more than 25 petabytes of archive capacity in various industries including digital media, engineering, government, Internet services, life sciences, manufacturing, oil and gas, and telecommunications. Whether they are from the Fortune® 1000 or the public sector, they all share a common need to cost-effectively preserve growing amounts of valuable information for long periods of time.

PowerFile is teamed with the world's largest storage and independent software vendors for certification of its hybrid storage appliances. For detailed information, please visit www.powerfile.com.

