

**2009 North American Data Storage Technologies
Green Excellence Award in Technology Innovation****Hie Electronics, Inc.**

Frost & Sullivan is proud to present its 2009 North American Data Storage Technologies Green Excellence Award in Technology Innovation to Hie Electronics, Inc. Hie Electronics provides significant savings to end users with reduced operational costs in terms of storage as well as energy savings. The company reduces the carbon footprint of end users significantly to enable the migration of datacenters to energy efficient units. The technology is a significant improvement over existing technologies and increases the lifecycle of storage considerably while reducing cost of ownership drastically.

Technology Profile

Technological platform characterized by long-term sustainability

The benchmark for Green Data Storage, the Hie Electronics TeraStack® Solution product line delivers a 90% energy cost savings when compared with current data storage technology. It integrates an application server with over 50 terabytes (TB) of extendable online, nearline, and offline data storage using only 800 watts of electricity. This compares to competing industry products requiring as much as 24,000 watts per hour. In a data center, 1 watt saved at the appliance level translates into 2.84 watts after adding in the UPS, air conditioning, electrical power filtering, etc. A hard drive system with a 24 kWh draw will cost \$50K to \$65K over a year. The Hie Electronics system, requiring only 800 watts, will cost less than \$5K per year to power and cool. The TeraStack® Solution is an open systems platform, fully scaling into the many petabyte (PB) class of data storage requirements.

The TBYTe® system is 30 inches tall and fits into a 19-inch rack-mount, giving it a distinct size-to-storage space advantage over traditional RAID array-based storage systems. It contains eight TeraStack® storage stacks with a capacity of 6.25TB each. Each TeraStack® can store 125 optical discs. The TBYTe®, with its 8 TeraStacks, can access up to 1000 Blu-ray discs within the unit and can simultaneously record, store, and replay data to remote clients. The media itself is manufacturer-tested to maintain data integrity for 50 to 100 years. The Blu-ray

media, spun with copper and silicon, does not rely on chemical dye methods, such as is in DVDs or CDs, and is thus much more durable.

Ability to optimize resource usage

One of the many diverse features of the TeraStack® Solution is that each TeraStack® can be easily removed, stored, or remounted in a different TBYTe® unit and then can use the information stored on the remounted TeraStack® almost immediately. Other stacks can be hot-swapped into and out of a TBYTe® unit or combining multiple units together to work as one solution, providing virtually limitless expansion capabilities.

The TBYTe® system, with the ability to archive and retrieve vast amounts of data, operates from a standard 110-volt wall outlet, with a maximum power consumption of only 800 watts.

Adaptability and responsiveness of the technology to address changing environmental needs and priorities

The media contained within each TeraStack® is energy passive; power is only required when the data is either read or written. The TBYTe® server uses a highly energy efficient multi-core processor. The amount of heat generated when compared to hard-drive based solutions is very low, which dispenses with the rigorous data management environment of large data storage systems. The product has an unequivocal competitive advantage.

Business Commitment

Entrepreneurial dexterity in incorporating conservation into the business concept

Hie Electronics, Inc. has incorporated the latest energy savings technologies into its TBYTe® series of products. Hie Electronics has packed online storage, backup, and archive into one simple TeraStack® Solution, significantly reducing the data management requirement of several racks of equipment and disparate systems down to just one dorm-room refrigerator-sized TBYTe® that requires no more than 800 watts to operate and has no special HVAC requirements.

The robust nature and high adaptability of Hie Electronics products currently give it a very competitive green position in four vertical markets: 1) data backup and archiving, 2) medical PACS hosting and long term medical record systems storage, 3) document scanning and archiving, and 4) video surveillance storage.

Development of technological solutions to address concerns regarding climate change

As an Energy Star® partner, Hie Electronics strives to set the standard for energy efficient data storage systems. With standard RAID storage solutions requiring several thousands of watts alone to manage just online data, Hie Electronics has developed a multi-tiered solution that is more energy efficient and provides a much greater data density. RAID solutions provide fast access storage, but also require RAID redundancy, mirroring and tape backup systems to protect the information contained within. The TeraStack® Solution has combined each of these operations into one simplified solution providing online access, nearline accessibility, and offline data storage capabilities.

Environmental Accountability*Demonstration of obligatory responsibility in reducing environmental burden as part of the solution*

In a 2008 data center energy study by Emerson, *Energy Logic: Reducing Data Center Energy Consumption by Creating Savings that Cascade Across Systems*; it was determined that for every watt saved in a data center, approximately 2.84 watts are saved altogether considering the power required from power conversion, distribution, UPS, and cooling. Typical industry hard-disk drive RAID solutions with a 50TB capacity range from 6,000 watts and up to operate, with additional power required for their data backup and archival systems. With a national average of roughly 10-cents per kilowatt-hour and rising, the TBYTe®, which requires no more than 800 watts to operate, provides an enormous cost savings advantage over systems requiring thousands of watts to operate.

T. C. O. (Total Cost of Ownership)

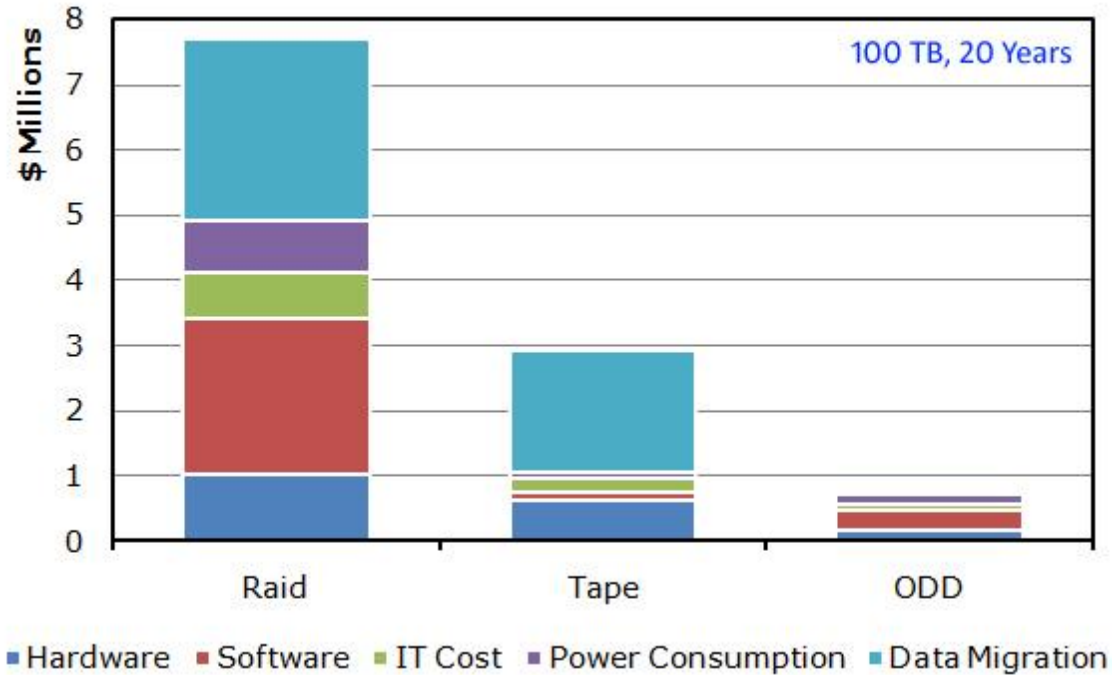


Chart 1.1: Total Cost of Ownership of Storage Technologies

Inherent features that enhances adoption/participation rate

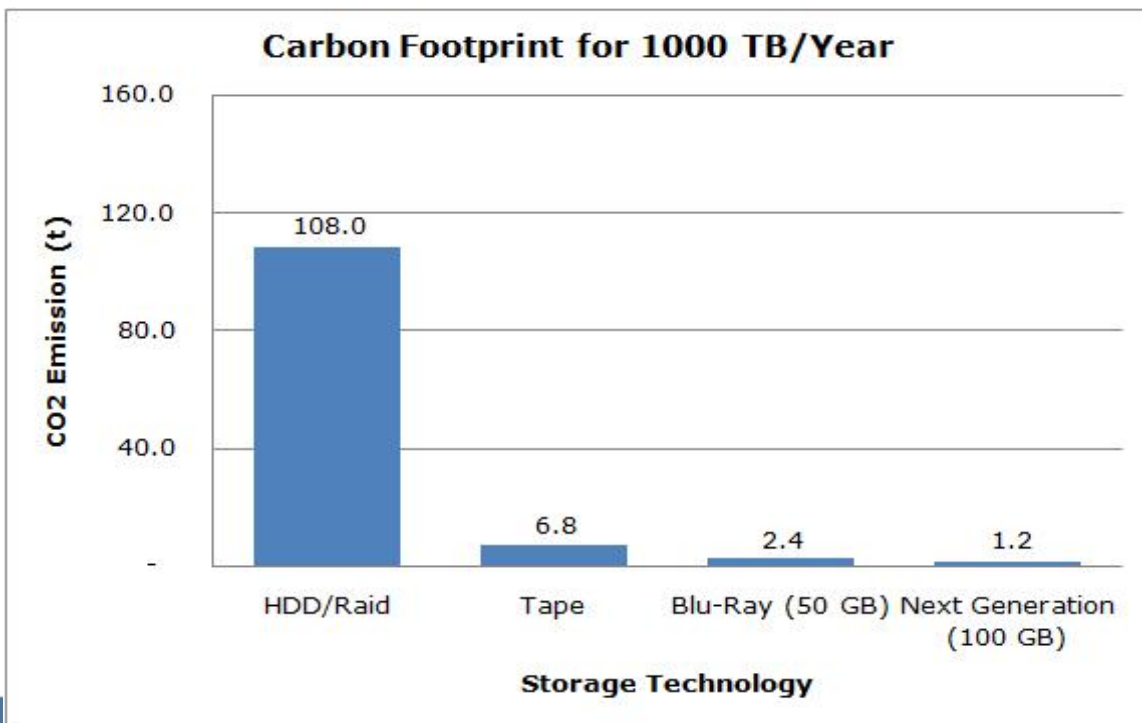
- i. Low energy consumption < 800 watts for the TBYTe®
- ii. Infrastructure costs for power, cooling, and floor space are a fraction of the competition
- iii. HIPAA compliant write-once read-many (WORM) media ensures authenticity of data
- iv. Automated data management reduces personnel requirements
- v. Open system architecture based on Java Enterprise middleware provides integration with best-of-breed and industry standard software for security analytics, document reproduction and management, data backup and archive, as well as medical PACS/DICOM and records data management
- vi. Reliably store large camera populations at high resolutions and frame rates providing months of accessible video data, manage thousands of medical images and patient record data, digitize millions of business documents providing searchable document accessibility, and provide automated hierarchical storage management (HSM) for enterprise data backup and archival needs

- vii. The scalable and extendable nature of the TBYTe® system and its TeraStack® technology allows users to scale from a 6.25TB solution to a multi-petabyte clustered system solution with online, nearline, and offline functionality.

Creation of collective accountability towards reducing the impact of climate change, dependency on finite resources and ecological footprint

The TeraStack® Solution’s reduced power requirements and carbon footprint offer a true ecological advantage over competitive storage systems that require thousands of watts just to operate Tier 1 architecture. With the extended lifetime of Blu-ray media (50 years for rewritable discs and 100 years for write-once discs) compared to magnetic tape (5-7 years) and hard disk drives (3-5 years), the TeraStack® Solution significantly reduces data migration requirements and the additional toxic landfill debris from tape and hard drive hardware and media at the end of their useful life. The TeraStack® Solution is designed around the 120mm optical disc format that has been a standard since its inception in the early 1980s when compact discs were first developed. TBYTe® Blu-ray burners are backwards compatible with DVD and CD formats, unlike tape formats that are rendered incompatible after only a few years with tape systems that are typically compatible for up to only two generations of previous tape formats. The obsolescence of tape and hard drive platforms leads to increased technology in landfills and scrap piles.

Chart 1.2: Carbon Footprint for 1000 TB/Year



Conclusion

Frost & Sullivan is proud to present its 2009 North American Data Storage Technologies Green Excellence Award in Technology Innovation to Hie Electronics, Inc. The company has demonstrated the ability to reduce energy costs with its storage technologies. Hie Electronics' sustainable solutions are helping datacenters and other applications perform optimally with lower carbon footprints.

Award Description

The Frost & Sullivan Green Excellence Award in Technology Innovation is presented to a company that has demonstrated superior technological advancement, which is aligned with a sustainable and environmentally conscious objective within its industry sector. This Award signifies the company's identification of a unique and revolutionary solution with significant environmental benefits, while presenting tremendous market potential simultaneously. Moreover, the Award also signifies that the company's overall business strategy is sound and poised for success.

Research Methodology

Technological excellence, focused on environmental priorities and long-term sustainability, is assessed regularly through continuous monitoring amongst market participants within specific industry sectors. Frost & Sullivan's analyst teams perform extensive interviews with companies within specific industries to evaluate their technologies, products and business strategies. In addition, research within that market space is performed to benchmark the Award recipient's technology against others. Also considered are elements such as strategic alliances, expected time to market, environmental soundness, long-term green strategies, and management advocacy behind the success of the technology.

Measurement Criteria

Specific measurement criteria used to determine the final award recipient are as follows:

Technology Profile

- Technological platform characterized by long-term sustainability
- Ability to optimize resource usage
- Adaptability and responsiveness of the technology to address changing environmental needs and priorities

Business Commitment

- Entrepreneurial dexterity in incorporating conservation into the business concept
- Development of technological solutions to address concerns regarding climate change
- Industry's acknowledgement of the green initiative in question, by way of financial support, strategic support, and recognition as a pioneering venture

Environmental Accountability

- Demonstration of obligatory responsibility in reducing environmental burden as part of the solution (e.g. cradle to grave solution)
- Inherent features that enhances adoption/participation rate
- Creation of collective accountability towards reducing the impact of climate change, dependency on finite resources and ecological footprint.

About Frost & Sullivan Green Excellence Awards

Instituted as an integral part of the Environment & Building Technologies Practice of Frost & Sullivan, Green Excellence Awards are presented to companies that have excelled in green product and technology innovation, and service achievements. These Awards recognize groundbreaking ideation and innovation across a multitude of disciplines that originated from a firm sense of environmental responsibility. Recipient companies are committed to a continuous focus on reducing the dependency on finite resources, from concept to commercialization. Their efforts demonstrate a resolve to reduce the impact of climate change and overall ecological footprint.

Frost & Sullivan Best Practices Awards recognize companies in a variety of regional and global markets for demonstrating outstanding achievement and superior performance in areas such as leadership, technological innovation, customer service, and strategic product development. Industry analysts compare market participants and measure performance through in-depth interviews, analysis, and extensive secondary research in order to identify best practices in the industry.

About Frost & Sullivan

Frost & Sullivan, the Growth Consulting Company, partners with clients to accelerate their growth. The company's Growth Partnership Services, Growth Consulting and Career Best Practices empower clients to create a growth focused culture that generates, evaluates and implements effective growth strategies. Frost & Sullivan employs over 45 years of experience in partnering with Global 1000 companies, emerging businesses and the investment community from more than 30 offices on six continents. For more information about Frost & Sullivan's Growth Partnerships, visit <http://www.frost.com>.

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