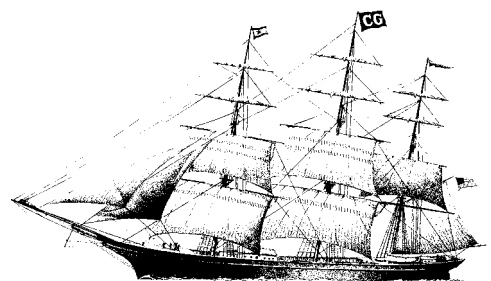


THE CLIPPER GROUP Navigator™



Navigating Information Technology Horizons™

Published Since 1993

Report #TCG2004016

March 1, 2004

Rainfinity RAINStorage with GridSwitch — Transparent Data Movement Takes the Next Step

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Management Summary

Data migration used to be such a pain that you did it as seldom as possible. While, in theory, data movement could be used as a performance or utilization tool, in practice the resulting service interruptions made its use counterproductive. When bandwidth improved, enterprises became larger and their workplaces more dispersed, and the need for safe, transparent data movement became acute. Rainfinity introduced its *RAINStorage* appliance¹, which provided the ability to move data securely, auditably, and non-disruptively. This was good. But the need to meet service levels for data access at a competitive cost takes more than a point product alone. So now, Rainfinity has added *GridSwitch* intelligence, which allows their transparent data movement to interface with storage management and storage resource management software. **The integration gives the capability to change RAINStorage from an opportunistic tool to an implement of optimization, which the data center can use to meet diverse service levels at a frugal price in an environment of every changing demands.**

Many data center management techniques can leverage deft data movement:

- **Tiered Storage:** Using quality- and cost-tiers of storage allows the enterprise to deal with the unhappy coincidence of burgeoning data and shrinking budgets – but it only makes economic sense if human participation is minimized – that is, if the moving is easy and the access to data, even open files, is maintained.
- **Stage in, Stage Out:** Recentralization of IT operations has not eliminated the need to stage data. Much of the data capture in many industries (retail, services) occurs in geographically dispersed locations or is generated by mobile workers. Non-disruptive, auditable data migration can optimize use of the often-inadequate connectivity to get the data into the data center. And in the distributed enterprise, when guaranteed access to large files is needed, off-peak staging of files to where they will be used is an alternative to expensive data streaming.
- **Data Center Optimization:** When you are managing IT infrastructure to satisfy business process objectives, data portability can be a way to optimize for performance, for cost, or to work best with resource limitations, particularly if it does not introduce undue overhead.

There are many storage management products that discover and monitor assets and can model what is to be done, snapshot data pointers, etc. Rainfinity has chosen not to duplicate their effort but to work with them via the GridSwitch. Together, these products can support SRM, ILM and Grid strategies. For more details, read on.

¹ See **The Clipper Group Navigator** entitled “*Rain Storage – A Catalyst for Fast, Non Disruptive Data Migration*”, dated June 2, 2003, at <http://www.clipper.com/research/TCG2003026.pdf>.

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The Role of the Overlay Capability.

Application-based data movement and array-based data movement both have limitations. Application-based data movement is limited to the needs of that application. Array-based data movement tends to be brand-specific, i.e., EMC's SRDF works only with EMC storage.

Many of today's needs for data movement transcend any single array or server. What is needed is an evocable, capability – a utility-like overlay.

Rainfinity's placement of their capabilities as an *appliance-in-the-fabric overlay* enhances the functionality of other elements, without replicating their capabilities or encumbering their functionality. It is made possible by Rainfinity's *Active-Band* architecture.

There is an increasingly meaningless holy war between in-band and out-of-band appliances that has been ongoing ever since storage networks became popular. Rainfinity has chosen to sit this war out by choosing a mode of operation that allows it to do both. The *RAINStorage* appliance is out-of-band by default (and thus not a performance drag or point of failure), and in-band (for greater efficiency) for the duration of a data movement transaction. The patented *Active-Band* technology that enables this is entirely an internal process, so it does not affect the openness of the product.

Overlay Characteristics

The overlay role makes Rainfinity a good partner to other vendors and makes *RAINStorage* easier to add to existing environments. Consider the following overlay characteristics:

Safe to Deploy

The overlay must not imperil the RAS features of the components it addresses.

- *RAINStorage with GridSwitch* incurs no data access exposure. No data is cached. Security is not compromised or further complicated.

Non-disruptive

An overlay should not impair perfor-

mance, or complicate management, of the environment.

- Rainfinity's *RAINStorage* does not affect file systems – clients can continue to mount their native file systems. End user access is continuous, including access to open files. ***RAINStorage handles all aspects of the data movement and repointing clients to the new location transparently.***

Non-Invasive

You do not need another monument, whether device or batch process, on your network to be circumvented. You do not need an appliance to do something that is already being done elsewhere.

- What your enterprise needs from an overlay depends on your processes and on the capability of the devices that are on your network. ***Data movement completes the data protection promise of a snapshot, and is the basis of traditional (batch) and non-traditional (trickle) backup strategies.*** As data movement is used more pervasively to enhance performance (by data placement and staging) and to lower infrastructure costs (by the use of cheaper storage tiers²), it may simplify data center management to use a common, scalable approach.
- Rainfinity does not discover storage devices but, through *GridSwitch*, accesses the knowledge of management systems. It simply effects and manages the data movement. And, ***Rainfinity is only in the data path of the data being moved, and for the duration of that move.*** It is not a doorstop but an occasional footprint. It can be easily de-installed, if you want to use it even more opportunistically in multiple locations.

² See **The Clipper Group Navigator** entitled *Tiered Storage Classes Save Money - Getting The Most Out Of Your Storage Infrastructure*, dated August 29, 2002, at <http://www.clipper.com/research/TCG2002030.pdf>.

Known Team Player

An overlay must work with the devices you have. It must have the partners and customers to insure its own long-term survival as a product.

- Rainfinity partners with key enterprise software (Veritas, Checkpoint, Symantec) and hardware (HP, Network Appliance, IBM, Siemens) vendors of the assets it will be addressing. It has over 500 enterprise customers, and key partnerships with Microsoft and Network Appliance.

The Roles of RAINStorage

Use in Grid

The grid concept has expanded the concept of consolidation to a larger order of magnitude, allowing systems to use remote assets as if they were local. There is a reason that processing grids presume the existence of a single or federated network of storage. Latency matters, particularly for compute-intensive workloads. So, if you are going to farm out an application to a particular server, not only the application but also the relevant data set must be readily accessible. For enterprise grids, a SAN will do. **In data grids, and as processing grids grow bigger, deft data movement will also be needed.**

Use in SRM

To manage storage resources effectively, you must be able to move the data. Arrays must be serviced, but the access to data must continue. RAINStorage can move the data to allow non-disruptive servicing. As assets are retained beyond their prime, they are an increasingly become an outage waiting to happen. **Often data migration is postponed because it is a lot of human work. RAINStorage solves that problem.**

Use in Storage ILM Initiatives

The back-end, storage side of ILM³ needs deft data movement. One way to get more for your storage dollar is to stage seldom-accessed data to lower-cost, slower access storage devices. These may include ATA disks, older, depreciated arrays, or even the robotics of tape and optical media libraries. While great in theory, when data movement was managed by humans and done as batches, the overhead of such schemes was prohibitive. **Transparent data movement allows these sensible schemes to be invoked.**

Performance Optimization

Performance of applications may be enhanced by placing data on the faster-accessed inner bands of disks, or by striping the data across drives for gang-access, giving higher throughput. Such practices were common when administrators had time to implement such niceties. With non-disruptive data movement, the invocation of optimization scripts (or, ideally, policy-driven automated optimization) can give applications a boost where and when they need it. **As bandwidth improves, these optimizing practices may, as with grid computing, be done on a larger scale – but this will only be possible if data movement is available as a pervasive utility across the network.**

Conclusion

Rainfinity's transparent data movement is a key capability for enterprise storage environments, and for enterprise data center clients. It eases the pain of moving data without adding new burdens of its own. Think about where it can help your enterprise – both for the data pains you have, and for those that loom on your enterprise's horizon.



³ Information Lifecycle Management, also called Data Lifecycle Management, is a process of cradle-to-grave management of files and data objects, according to policy specifications.

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