

Copan Systems' *Revolution 200T* Trims the Costs of Spinning and Spinning and Spinning

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Management Summary

There is a large and persistent gap between the price and performance of traditional disk arrays and that of tape libraries. Tape libraries' ability to stop and dismount tapes gives them a very low cost – but these same characteristics, along with the serial nature of tape media, extend the time to access data. Traditional disk arrays give faster access time, but incur ongoing costs for power and cooling, because the disks are constantly spinning. Use of lower-cost disks, such as ATA, does not change the profile of disk arrays' operational costs.

As the volume of enterprise data explodes, enterprises have realized that there is a difference in access demands between the data that supports the real-time transactions of online business processes and commerce, and the much larger bulk of data that supported those transactions in the past. **Yesterday's information is history – but it may be a history that is vital to managing the business and planning for the strategies of tomorrow.** The bulk of *yesterday's history* is big, and keeping it on traditional disk arrays is expensive. Many of the characteristics of high-end storage arrays, like caching algorithms for write optimization, are wasted on it. As with most mission-critical data, yesterday's history has already been replicated on write, or shortly thereafter. Still, enterprises want the quick access provided by disks. **They want something to fill the gap between traditional disk and tape.**

By stopping most of the disks on their array most of the time, Copan Systems' *Revolution 200T* disk array delivers to these enterprise long-term data storage requirements. That most disks are idle reduces the need for extensive cooling, so the storage can be built denser than in traditional arrays. By being able to stop and start the disks, **Copan Systems combines the economies of quiesced media with the high-touch data utilities of a fixed disk environment, and adds the high density that today's data centers demand.** Access time is six seconds or so – less than some other forms of reference data storage, and far less than tape. Copan Systems has does more than fill the gap – it fills the need.

By using front-end personality engines, *Revolution* has the ability to be used in a variety of ways. As a virtual tape array, *Revolution* can slide seamlessly into your existing architecture. As a new tier of archival storage, it can change how you manage your data storage costs. **The value of Copan *Revolution* is its reasonable access time, low purchase price and ongoing environmental costs. Its worth is in how it changes the landscape of data center storage. Read on for details.**

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Copan Revolution 200T Architecture

The Revolution architecture has three levels.

- **A canister or drawer contains 14 drives.** In the canister is an ASIC that acts as a SATA switch or router, connecting the drives. Copan uses Hitachi's 250 GB SATA drives, whose ramp architecture allows the drives to be quiesced safely. Serial ATA can tolerate forty thousand on-off cycles over its lifetime – the equivalent of decades of service. Stopping the drives does not reduce their longevity – in fact, the occasional use for this class of storage gives SATA, in this environment, the equivalent longevity of FC and SCSI drives.
- **Eight canisters fill a shelf.** Each shelf has a RAID controller that handles many variants of RAID. *Power Managed RAID* is a specialized version that only powers up the particular drive in a set that is needed. This *Power Managed RAID* provides 40 to 80+ MB/second sequential access to a single RAID group. Copan's *Disc Aerobics* constantly monitors the drives and periodically powers them up and checks the data and metadata for errors.¹ Global spares in each drawer may be used as migration targets, should a drive reach a threshold where performance might degrade.
- **Each array is fronted with Fibre Channel connected to a front-end server that houses the personality modules.** These personality modules let the data look like what the user is expecting - files, disk blocks or tape, which traditional back-up utilities expect.

Because of its density, Copan Revolution provides 22 TB per square foot at a cost of \$3.50/GB, with much lower environmental costs than always-on arrays. **These characteristics make Copan's Revolution 200T a new class of storage.**

The Roles of Revolution

Copan Revolution fills out the landscape, and alters the roles of tiered storage². It can play multiple roles in a tiered storage environment.

Back End to High Performance Disk

As storage bulks big and disk drives grow huge, disk I/O can suffer. An array of new I/O

¹ Think of this as the "exercise" that disks need to remain "physically fit."

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

approaches has sprung up to deal with this problem, but concentrating relevant data on higher performance arrays by offloading static data allows hyperactive transaction environments to work better. While data placement on the array is an optimization tool, disk arrays are not like the original QWERTY keyboards, which were optimized to prevent the typeface levers of vowels from jamming.

Front-End to Offsite Tape Library

Revolution also can be used as a virtual tape server, a front-end to an offsite tape library. This is a familiar role for most data centers, one that Revolution can fill seamlessly. Acting as a *virtual tape array* is Revolution's incarnation at its first release. It can receive backups and other data destined for tapes in libraries from ADIC, ATL, HP, IBM, and StorageTek, and can write to these libraries, as well.

Storage in the Middle

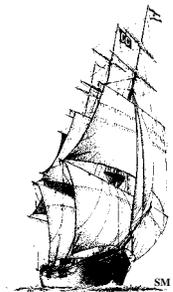
Most enterprises will want to optimize tiers of storage based not just on cost, but also on the way data on them is accessed. How many tiers there are will depend on the size of the enterprise and the complexity and number of its processes. **With Copan Revolution 200T as a primary bulk-storage medium, always-spinning disk can focused on read-write intensive data.** And the back-end, deep archive can be used for data whose access is not time-sensitive.

Revolution's active archive role can be used to optimize backup – and particularly to optimize restoration (which almost always consists of active data). Its access time is appropriate to research, reference and compliance needs.

How individual enterprises will use Copan Revolution will depend on what pains are foremost – time, money, or functionality. **Copan Systems' analysis indicates that the Revolution 200T is less costly than existing low-cost arrays on a lifecycle cost basis, and even less costly than tape, when administrative costs are considered.**

Conclusion

Non-spinning disks are an idea whose time has come. **The Copan Revolution 200T brings another way to get data storage done, with the access times and price points that today's enterprise needs.** Think about it for your enterprise.



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