



2.5-Inch SFF SAS Drive Delivers MoneyGram International Case Study

Pundits say we're well on our way to a cashless society, and MoneyGram International has played a prominent role in that fiscal revolution. Catering to consumers, retail businesses and financial institutions, MoneyGram offers a comprehensive suite of services to swiftly and safely deliver funds virtually anywhere in the world.

Company

MoneyGram International

Location

St. Louis Park, Minnesota

Contact

www.moneygram.com

Primary Focus

Global leader in international money transfers, largest processor of money orders in the U.S. Provides affordable, reliable and convenient payment services to consumers and businesses.

"SFF SAS solutions will change the way we think about storage architectures."

—Tom Becchetti

And it's a winning approach; MoneyGram's compelling blend of speed, convenience and security has made it a global leader in international money transfers, and the largest processor of money orders in the U.S. Of course, someone has to keep track of these millions of daily financial transactions; that's where MoneyGram's Tom Becchetti comes in.

Record-Holding Team

As senior capacity planner, Becchetti is responsible for ensuring the data records for these myriad transactions are safe, secure and readily accessible. In just two short years Becchetti has driven numerous innovations in MoneyGram's storage system capabilities, including SAN deployment, virtualization and clustering across the WAN to deliver far greater throughput, reliability and efficiency.

To generate detailed profiles of MoneyGram's business performance, MoneyGram agents nationwide rely on leading enterprise reporting tools. Lead programmer analyst Janet Schultz notes a recent move for their reports: "Instead of storing them on the local (parallel SCSI) hard drive, we started throwing them out on the SAN." The result was significantly improved performance, with run times on report images slashed anywhere from 29 to 59 percent (see table).

Maintaining reports on the SAN was a necessity due to performance constraints. But as Becchetti observes, it's not particularly cost-effective: "A redundant attachment to the SAN is \$4000 or \$5000 for all of the various ports you use up." The direct-attach approach is more economical for some applications, but the performance hit entailed by parallel SCSI is hard to ignore.

Think Small

So when offered the opportunity to evaluate small form factor (SFF) 2.5-inch Serial Attached SCSI (SAS) disc drives, MoneyGram wasted no time signing on. After all, it's no secret that SAS delivers speedier performance than its parallel predecessor, along with far greater scalability and flexibility.

But SFF SAS presses the advantage even further; SFF 2.5-inch drives are 70 percent smaller than 3.5-inch drives, enabling them to deliver on average 130 to 150 percent greater system performance in the same footprint. And because they use 40 percent less power, they run cooler with reduced airflow requirements, enabling greater storage density and data center space efficiency.

According to Fred Plott, systems analyst, MoneyGram's expectations were straightforward: "Performance, like any product we bring in. We were intrigued by the form factor and also hoping to see lower demand on power. But performance was first and foremost, and don't forget enterprise-class reliability, because that's exactly what we're always looking for."

Plott continues, "Deployment was as clean as I would want it to be. I've had so much exposure to [our current vendor's] product, it's nice to see another vendor staying on top of making it easy to handle the hardware and get it running."

Echoes Becchetti, "HP has done an excellent job in implementing SFF...I worked with Fred and we set that up in a matter of an hour for the whole system, including racking it and everything else. It's kind of almost non-eventful, all the devices that came in the box all worked from square one."

Performance...and More

MoneyGram's test results (reflecting report image run times) confirm stunning performance advantages for SFF SAS drives (see table). While laboratory trials have typically indicated 130 to 150 percent greater I/O performance than 3.5-inch drives, this preliminary field evaluation of SFF SAS performance exceeds expectations. MoneyGram's tests show SFF SAS drives besting 3.5-inch SCSI drives by a significant margin.

MoneyGram is also encouraged by the energy efficiency and space-saving benefits of SFF SAS. As Becchetti notes, “We also built a second data center, and for the right application SFF would be a good use, because we pay square footage charges at that data center and amperage charges, so the smaller draw that SFF takes and the less square footage would be a good fit for that.”

But with enterprise-class reliability yet another benefit of SFF SAS drives, might MoneyGram reconsider blade servers? “I would think so,” notes Becchetti, “because that was our main hesitation. We might take a second look at blades if they have SFF SAS installed, especially for co-lo where we’re paying for the floor space.”

Conclusion

It comes as no surprise that Becchetti endorses widespread adoption of SFF SAS: “I’d like to see SFF SAS drives in both internal server storage and external array environments. It would be nice to realize the real estate and power savings in the data center. What used to take 2U could then only take 1U, and that would help to offset our overall growth.” Concludes Becchetti, “SFF SAS solutions will change the way we think about storage architectures.”

Boasting a unique blend of performance, efficiency and reliability, SFF SAS disc drives deliver superior I/O performance when compared to conventional 3.5-inch drives, yet require far less data center space and consume significantly less power. Becchetti sums up his feelings nicely: “SFF SAS is a good experience. I like the concept, I like the idea and we’ll probably be using more of it.”

Even when co-location (co-lo) charges are not a consideration, Becchetti sees the value of SFF: “We’ve actually reduced the square footage [in the data center at MoneyGram’s HQ], so it’s not as much of an issue. However we’re looking at generator and battery upgrades because of power, so it would be nice if storage vendors would get on board and start using SFF SAS devices to save power.”

Blades Reborn?

Blade servers are still a work in progress for Becchetti, who notes, “We bought some blades last year, and their onboard storage devices were comparable to what goes in laptops. We’ve had quite a few failures and the performance on them isn’t as good. We really didn’t want to go with a 3.5-inch SCSI solution in the blade center because it took up so much real estate in there.”

Confirms Plott, “Blade architecture looks fine, actually the product works well for us. But the notebook drives are the blade’s one achilles’ heel, and that storage is such a vulnerable piece that we’ve realized that we can’t rely on it in production.”

To Learn More:

Shrinking the Data Center

High-density servers are key in the enterprise’s quest to cut data center costs and improve efficiency. Savvio, the world’s first 2.5-inch enterprise disc drive, accelerates data center consolidation by delivering enterprise-class performance and reliability in a space-saving form factor. Savvio enables high-I/O-density servers and storage systems to achieve higher IOPS in a smaller footprint while using less power, boosting data center ROI. To learn more about Seagate® Savvio 10K.1 drives, go to www.seagate.com/products/discfamily/savvio.

“MoneyGram’s tests show SFF SAS drives besting 3.5-inch SCSI drive performance by a significant margin.”

Batch Run Times: SFF SAS vs. Parallel SCSI and SAN				
Transaction Count	SAN ¹ , Total Time (hours)	SFF SAS ² , Total Time (hours)	3.5-Inch SCSI ³ , Total Time (hours)	SFF SAS Performance Edge
108076/3420	2:35	1:10	3:40	2.2x faster than SAN, 3.1x faster than SCSI
97844/3417	2:30	0:46	4:52	3.2x faster than SAN, 6.3x faster than SCSI
95056/3426	2:35	1:16	6:18	2x faster than SAN, 4.9x faster than SCSI

1 Dual Xeon 2.4GHz with 2x 2GB Fibre Channel to 300GB storage allocation on 3.5-inch 10K drives.

2 HP DL360 G4p server with four (4) 36GB 2.5-inch SFF 10K drives, RAID 0+1; HP MSA50 storage array with ten (10) 72GB 2.5-inch SFF 10K drives, RAID 4+1.

3 Dual Xeon 2.0GHz with six (6) 72GB 3.5-inch 10K, RAID 5+1; no enclosure.

Note: These figures reflect disc drive performance obtained under specific test conditions; there are many other factors in testing which can affect final results. Companies may obtain different results when conducting evaluations in their own unique storage environments.