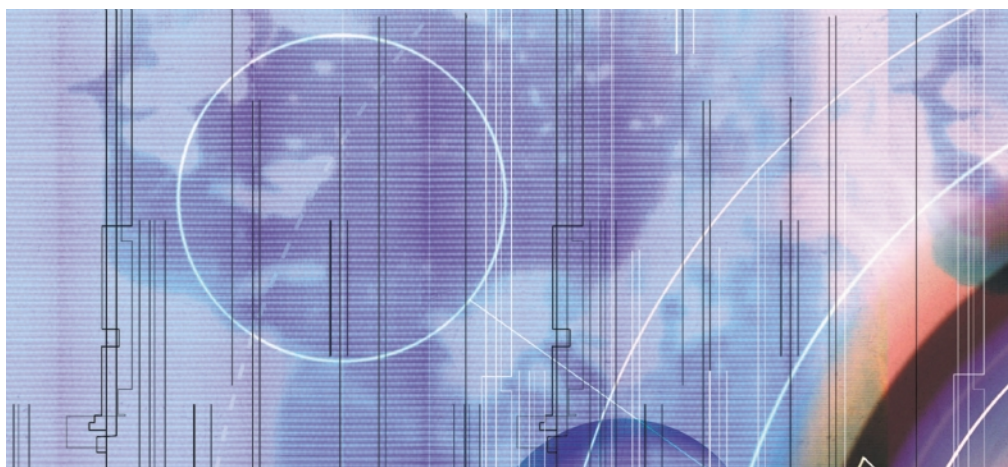


Omgeo



Omgeo Deploys EMC Multi-Regional Business Continuity Solution

SOLUTION SNAPSHOT

Omgeo has replicated all trade data across multiple data centers spanning more than 1,000 miles in New York, Boston, and the midwestern U.S.

• **Applications:** Omgeo Central Trade Manager™ (Omgeo CTM), Omgeo OASYS™, Omgeo OASYS Global™ and Omgeo TradeMatch™

• **EMC Software:** SRDF®, SRDF/DM, SRDF/AR, TimeFinder®, EMC ControlCenter™, EMC PowerPath®

• **Storage Infrastructure:** EMC Symmetrix networked and direct-attached storage, Connectrix™ Fibre Channel switches

• **Production Environment:** Heterogeneous environment including IBM mainframes and Sun Solaris, Linux, and Windows servers

Profile: As the leading provider of post-trade pre-settlement trade management solutions, Omgeo is a key element of the core infrastructure of global securities markets.

Challenge: Post-9/11, Omgeo needed to enhance its existing primary and remote data centers, as well as implement a new out-of-region data center to satisfy new regulations and provide failsafe business continuity.

Business value: With EMC business continuity software, storage, and services, Omgeo achieved:

- Data replication across multiple data centers in three U.S. locations—over more than 1,000 miles—with the ability to restore all trade data to meet the company's recovery time objective (RTO), along with minimal data exposure;
- Automated multi-hop data replication from New York to the Midwest—with replication cycle time cut as much as 50 percent, below the two-hour target set by federal regulations—to dramatically reduce risk of data loss;
- 15-20 percent higher throughput performance compared with traditional high-end RAID array technologies—to support shortened trade settlement cycles and easily handle peaks created by batch processing of large institutional trades;
- Reduction of data loss to nearly zero in writing to secondary data centers—a major step in meeting Omgeo's recovery point objective (RPO);
- Creation of mirrored business continuance volumes (BCVs) for consistent, non-disruptive, error-free backups each day, and for use as active mirrors for data restoration.

Global trade management provider extends data protection over 1,000 miles

As the leading provider of post-trade pre-settlement trade processing solutions, Omgeo LLC is a key element of the core infrastructure of global equity and fixed income markets. The company is a global joint venture between The Depository Trust & Clearing Corporation (DTCC) and Thomson Financial, and processes more than one million trades per day, serving 6,000 investment managers, broker/dealers, and custodians in more than 40 countries. Omgeo manages and reduces risks associated with post-trade processing for this global investment community, and has turned to EMC Corporation to protect its trade management and other critical data with a multi-regional business continuity solution.

In a stringent regulatory atmosphere, Omgeo has continued to introduce improvements to its primary and secondary data centers, and created a new out-of-region data center, satisfying new regulations and providing failsafe business continuity for their mainframe and open systems environment. Using a combination of EMC® Symmetrix® storage systems and the EMC Symmetrix Remote Data Facility (SRDF®) family of software, the company has extended data protection over 1,000 miles to data centers in New York, Massachusetts, and the Midwest in order to secure the expanding number of global transaction and related trade details. The resulting solution delivers minimal data exposure along with long-distance replication, dramatically improving Omgeo's ability to ensure secure, uninterrupted trade processing in the event of any system or market disruptions.

"The Inter-Agency Group, which is a combination of the Securities and Exchange Commission (SEC), the Federal Reserve Bank, and the Office of the Comptroller of the Currency, issued updated regulations in April of 2003," explained Omgeo's Managing Director of Technology, Dave Cutright. "The new regulations—specified in the Interagency Paper on Sound Practices to Strengthen the Resilience of the U.S. Financial System—are the benchmarks we use to measure ourselves. We exceed the Federal same-day guideline and meet the two-hour data replication targets it sets. Omgeo operates by the most stringent standards in the financial services industry and EMC products and services help us meet our objectives. For us, that's the bottom line."

Omgeo benefits from business continuity solutions expertise

Since the company was created in 2001, Omgeo has operated primary and secondary data centers in both its New York and Massachusetts locations. All four data centers in these locations, which already employed EMC equipment, operated smoothly through the 9/11 crisis, never having to default to their business resumption plan. After the terror attacks, new federal guidelines emerged that mandated core securities trading companies like Omgeo provide disaster recovery locations outside their main operating regions. The intent of a more geographically dispersed environment is to ensure that regional disasters would not disrupt trade processing. Omgeo extended its existing environment to include a data center in the midwestern U.S., thereby requiring data replication across more than 1,000 miles.

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To meet this challenge, Omgeo and DTCC turned to EMC business continuity services professionals to design and implement a solution to address the new federal mandates. The design team created a business continuity environment based on EMC Symmetrix storage systems, combined with the EMC family of SRDF software.

According to Gordie Sands, Omgeo's Manager of Infrastructure Planning, EMC Services are an important factor in supporting and improving Omgeo's business continuity solution. "We have greatly benefited from EMC's deep knowledge of business continuity and their great service and solutions expertise. The EMC Services group is very proactive, and when we need them for any major technology project, they're right there to help us plan it out, coordinate it, and execute on it as well."

Making long-distance business continuity a practical reality

Omgeo worked closely with its parent company, DTCC, and the EMC Services group to ensure that data written to the out-of-region data center is accurate and complete. EMC SRDF/Synchronous (SRDF/S) software, along with SRDF/Automated Replication (SRDF/AR) and SRDF/Data Mobility (SRDF/DM) software, delivers a multi-hop functionality for their mainframe and open systems environment, which breaks down the data protection process into multiple steps or "hops." In the first hop, trade data from multiple EMC Symmetrix frames is synchronously replicated and aggregated into a common data set at the New York area's secondary data center. In the next hop, the combined data set is replicated from New York to the Midwest data center.

Explained Sands, "Maintaining consistency across all data sets and across Symmetrix systems is one of the main advantages of the SRDF software family. In the hop that aggregates data in New York, we use SRDF/S to ensure minimal data loss for each of the data streams being aggregated. This is a critical element in safeguarding the data integrity. Without it, it would be difficult, if not impossible, to correlate the data from the different sources. In the second hop, we use SRDF/DM, which is asynchronous and the best-fit solution for us in replicating the aggregated data set across such a large distance to the Midwest data center."

Sands added that they work with EMC and DTCC continuously to improve replication performance and reduce the possibility of data loss for the final hop of the solution. "We've put an intensive effort into shrinking the amount of potential data loss in our second hop," he said, "and to date we've cut the replication cycle time by as much as half, bringing Omgeo under the two-hour target set by federal regulations. With continued enhancements, our goal is to shrink the window even further, to less than five minutes. This continues to reduce the risk of data loss and makes out-of-region data protection a practical reality."

Omgeo tests its business continuity capabilities frequently throughout the year and validates the integrity of data copied to the remote data center via an audit performed by an independent group inside the company. This allows Cutright, Sands, and their team to be certain that they are meeting both their recovery point objective (RPO)—recovering all data to the exact point of disruption—and their recovery time objective (RTO)—reducing the time gap between when a service goes down to when it is restored.

"In this industry, there's not a whole lot of tolerance for risk. In fact, it's the rationale for the ROI we deliver," said Cutright. "Our systems and trading applications help clients reduce and manage their risk. And we're using EMC technologies to reduce our own risk and pass that reduction along to our clients."

Synchronous realtime replication in a high-volume environment

Aside from its multi-region deployment, the central strength of Omgeo's business continuity solution remains realtime synchronous replication for localized data recovery. The company processes trades each day using a variety of legacy trading applications, as well as its next generation solution, Omgeo Central Trade Manager (Omgeo CTM), a global central trade management solution that provides exception-only processing and realtime settlement instruction enrichment.

All of Omgeo's data—including trade confirmations, as well as related product and application data—is stored on EMC Symmetrix systems. In New York, Omgeo uses EMC SRDF/S to replicate data synchronously from EMC Symmetrix systems at the primary data center to Symmetrix systems at the secondary data center.

"EMC systems and SRDF/S software help ensure the soundness and availability of more than a million trades a day, and easily absorb the peaks in trade volume created by batch processing of large institutional trades near the end of the day," said Cutright. "We need a high-capacity, high-performance system that is not only available but also capable of zipping through those peak numbers. The EMC solutions do the job for us."

Cutright cites the results of an Omgeo study measuring system throughput. "It demonstrated that our throughput improved 15 to 20 percent using EMC over traditional high-end RAID array technologies. We know we have a performance advantage using EMC Symmetrix systems."

In addition, Cutright gives EMC top marks for high availability—the ability to keep the system online without disruption. "EMC solutions are very resilient," he said. "The redundant architecture within Symmetrix makes it much more highly available than any of the other RAID array systems that we've experienced. There are fewer problems and disruptions due to local component failures—it's really what led us to EMC in the first place."

Extended distance replication with minimal data loss

Since Omgeo's primary and secondary data centers in Massachusetts are three times further apart than their New York operations, Omgeo employs SRDF/S, but uses a semi-synchronous option designed for moderately extended distances. Even though distance between the Massachusetts region's data centers is significantly further, Omgeo has found that the systems are not experiencing any performance degradation and are running at nearly synchronous rates.

"The EMC system is so efficient in performing remote writes, even across an extended physical distance, it's as if the system is running in fully synchronous mode," Sands said. "This is a real testament to the performance of the Symmetrix and SRDF family of software. It reduces our risk of data loss to nearly zero, and helps us to meet our RPO."

Mirrored business continuity volumes deliver accurate, consistent backup copies

Another important component in Omgeo's business continuity strategy is EMC TimeFinder®/Mirror software, which is used to create point-in-time copies—business continuance volumes (BCVs)—of the entire production environment. These mirror copies help Omgeo generate consistent, error-free backups each day, offloading background processing from the production volumes. These BCVs also serve as active mirrors for high availability and data restoration, in the event that other elements of the disaster recovery process fail.

“Our backup strategy is fairly straightforward and non-disruptive to our day-to-day operations,” said Cutright. “We run TimeFinder/Mirror BCVs in a mirrored state throughout the day, up to the point that we’re ready to do our backups. Then, we split the TimeFinder/Mirror copy and access the BCV as the source for the backup, eliminating any impact on the production volumes. Once the backup write is complete, we re-establish the TimeFinder/Mirror volumes again and the BCVs are incrementally updated until they are fully synchronized with the production volume, at which point they continue to act as true mirrors. The mirror is very accurate, which is why we treat it as an additional copy of our trade and application data, available to us if we need to recover from a disaster. For our business requirements, TimeFinder/Mirror’s implementation—using true mirrors—gives us significant performance and availability advantages when compared to other vendors’ clone implementations.”

Keeping all data centers in sync

A project currently in prototype at Omgeo will further extend its EMC systems to ensure that when a business continuity recovery is performed, all systems will run identically, from the exact code base, keeping all applications in sync with production.

Cutright explained, “We’re planning to boot off our Symmetrix instead of our servers, which will mean that everything, including all storage, the operating system, and application code binaries will run on Symmetrix. This will help us in two ways. It will improve the integrity of our recovery and reduce the time it takes to perform the recovery because we’ll eliminate a step that we need to perform now in gathering and resolving any differences in the application image at both locations. We’ll be guaranteed that when we start a recovery we have an exact image of production at our recovery site.”

He added, “It’s a challenge to make sure that all sites are in fact running exactly the same version of every little piece of binary code. This new project will allow us to automate the replication even further using the SRDF family of software and Symmetrix.”

Omgeo will add these new enhancements to the company’s existing business continuity achievements, which include an out-of-region business continuity solution that exceeds federal guidelines, dramatically reduced replication cycle times, and the ability to ensure secure, uninterrupted trade processing with minimal data loss in its regional data centers. It’s further proof that, every day, Omgeo and EMC are succeeding in reducing risk for the global investment community through advanced business continuity.



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