

## Global Crossing

Calling on a Datacenter Availability Solution from Symantec Produces Faster Data Recovery and Lower TCO

With millions of end users and 40 percent of Fortune 500 companies counting on its network services for high available and reliability, Global Crossing turned to Symantec for a datacenter availability solution based on Storage Foundation and Volume Replicator. The telecommunications leader meets aggressive customer service level agreements by delivering 99.99 percent availability. By standardizing on the Symantec software infrastructure solution, Global Crossing reduced database recovery time 66 percent and dramatically improved information integrity via point-in-time data recovery. **Heterogeneous hardware and software support allows Global Crossing to maintain disparate hardware systems, including a SATA storage architecture, thereby reducing storage hardware costs by as much as 80 percent.**

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**Doug Hughes**

Senior UNIX Administrator  
Global Crossing

### Connecting the world to save customers money

Global Crossing is making the world smaller, but only by presenting their IT group with large challenges, which keep getting larger. As a leading telecommunications provider, the company carries more than four billion minutes a month over its voice network. Its fiber optic network stretches more than 100,000 route miles to deliver services to 500 major cities, 50 countries, and six continents around the globe. More than 40 percent of Fortune 500 companies count on its network, as do 700 carriers, mobile operators, and ISPs connecting millions of users.

The Global Crossing network makes the company a leader in providing converged services, or voice, video, and data applications that use a single connection over an Internet Protocol (IP)-based network. This type of connection helps customers reduce costs while taking advantage of options such as voice over IP and video conferencing.

### Downtime can mean “Contract Over”

Global Crossing’s promise to customers is to deliver scalability, reliability, and performance backed by best-in-class service level agreements (SLAs). Global Crossing’s SLAs specify end-to-end network availability, guaranteed time of installation, and mean time to restore. A satisfaction guarantee allows customers to exit contracts if service falters.

#### Company Profile

Global Crossing ([www.globalcrossing.com](http://www.globalcrossing.com)) provides telecommunications solutions over the world's first integrated global IP-based network, delivering services to more than 500 major cities, 50 countries, and six continents around the globe.

#### Industry

Telecommunications

#### Solution

- Storage Management
- Data Protection

Symantec Software helps Global Crossing streamline storage management and data protection processes to minimize overall TCO.

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“Our customers expect quality services and utility-class reliability—99.99 percent uptime—something that can be difficult to achieve with today’s tight budgets,” says Doug Hughes, senior UNIX administrator. “We have to meet these numbers to retain subscribers and keep our revenue stream healthy.”

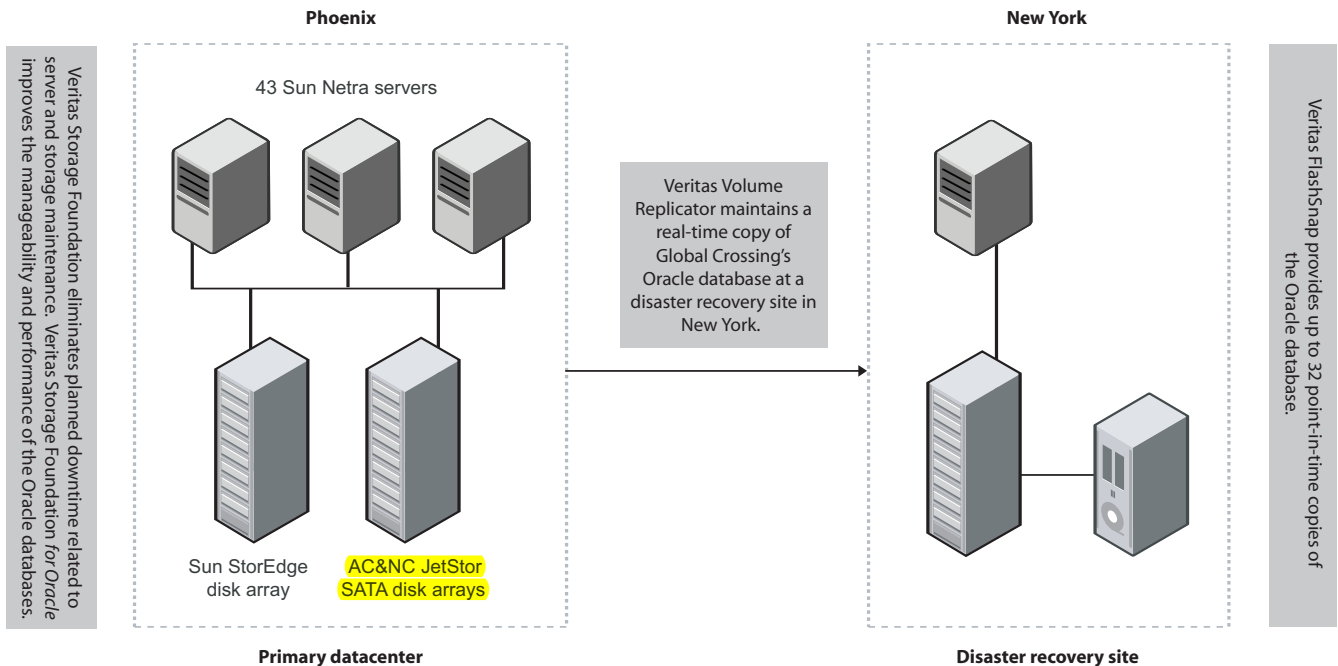
To provide this level of service, Global Crossing must ensure high availability of its worldwide data networks comprised of approximately 7,500 devices. The company must also track and ensure availability of business-critical data such as customer usage, billing, and service performance statistics to enable it to meet its SLAs and deliver accurate information to customers. This data is gathered in near real-time and currently consists of about two terabytes stored in an Oracle database. The amount of data is growing by at least 10 percent per quarter.

The challenge facing Hughes’ group is to manage, backup, and protect this data cost-efficiently, in a way that accommodates rapid growth.

**Symantec offers a reliable, cost-efficient “sweetspot”**

To meet the challenge, the IT staff carefully evaluated in-house application development. But in the end they turned to Symantec Corporation (formerly Veritas Software) for help. Hughes explains the deciding criteria: “The technologies from Symantec give us rich functionality that would be difficult, costly, and time-consuming to achieve if we tried to develop it ourselves.” The staff also had a long, successful history with Symantec data-center availability products and wanted to stay with proven solutions.

**Global Crossing Storage Management and Data Protection Architecture**



With the company's demand for 99.99 percent availability in mind, it chose Veritas Storage Foundation™ software to handle the majority of billing and storage management requirements. "Storage Foundation eliminates planned downtime related to everyday storage maintenance tasks," says Hughes. "It lets my staff quickly recover files, improve data performance, and more easily manage applications in our global IP network."

As an additional solution, Hughes's group chose Veritas Storage Foundation for Oracle software to improve the manageability and performance of the company's Oracle databases. It allows the use of file systems, which provide easier management and more flexibility than do raw Oracle volumes. "If you have your data on a raw Oracle volume on a disk," Hughes says, "then managing it and performing a step such as adding a new disk system is very difficult. But with the file system capability of Veritas Storage Foundation software, I can scale up quickly and transparently, with no downtime."

Veritas Storage Foundation for Oracle software also lets administrators set policy-based controls for the database, as well as automate various tasks and create alarms for monitoring critical parameters. Global Crossing's IT staff is now alerted to proactively correct small database problems before they become large ones. The automated tasks save time, and policy-based controls further save their time correcting errors.

#### Faster data restoration than tape

To protect Global Crossing against data loss and ensure that the database does not run out of disk space, Hughes uses the Storage Checkpoint feature in Storage Foundation to monitor database file system space usage online and to speed data restoration. "When we had a corruption issue not long ago," calls Hughes, "we were able to take our most recent Storage Checkpoint snap-

## SOLUTION AT A GLANCE

### Business Drivers

- Retain subscribers and ensure revenue stream by meeting customer SLAs
- Minimize risk of data loss and ensure continuity of business operations
- Streamline backup and recovery operations to save IT staff time
- Minimize infrastructure total cost of ownership (TCO)

### Technology Challenges

- Enable faster and easier scalability
- Maintain large storage environment and reduce maintenance downtime
- Support disaster recovery between locations in Arizona and New York

### Solution

- Global Crossing is able to focus on delivering optimal customer service with a datacenter availability solution backed by Symantec that delivers in excess of 99.99 percent uptime.

### Symantec Products

- Veritas Storage Foundation™
- Veritas Storage Foundation™ for Oracle
- Veritas Volume Replicator
- Veritas FlashSnap™

### Technology Environment

- Overview: Customer Billing and Statistics Collection; two geographically disparate data centers—over 2,500 miles apart—for failover and disaster recovery
- Server Platform: 43 Sun Netra servers running the Solaris 8 Operating System
- Storage Platform: Sun StorEdge and AC&NC Jetstor SATA disk arrays with 2 terabyte total storage
- Applications: Oracle 9i database

### Symantec Services

- Veritas Basic Support

shot from the Oracle database to recover the data in just 20 minutes. The process might have taken as long as an hour if we had to go to a tape backup for recovery, and the data would have been up to several days old."

#### Putting data into two places at once

To further strengthen data protection and provide for business continuity, the IT staff chose Veritas Volume Replicator software. They use it to create an exact copy of their Oracle database in Phoenix, Arizona on a duplicate system in New York City, instead of implementing an expensive, real-time high availability solution. The two sites are designed so that they can be switched easily between primary and secondary roles as needed, for

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upgrading or maintenance. “Volume Replicator lets us keep a near real-time flow of data between primary and secondary systems and offload backup processing to promote improved performance on our primary system,” says Hughes. “The only latency is the distance between Arizona and New York, which is about 82 or 84 milliseconds. We essentially have a zero recovery point. In the past few years, we’ve had no unplanned downtime. Our automatic failover came into play just once, several years ago, when there was a power failure. Thanks to Veritas Volume Replicator, we switched datacenter operations over without interruption.”

#### Offloading backup for greater efficiency

To keep his primary site working at maximum efficiency, Hughes added Veritas FlashSnap, an option of Veritas Storage Foundation, to his secondary site. FlashSnap provides up to 32 point-in-time “snapshot” copies of the secondary site for key business applications such as data backup or analysis. By allowing another system to access the snapshots of information created, critical operations can be accomplished without slowing the performance of the primary server environment. The FlashSnap technology compares favorably to traditional snapshot techniques that typically create just one to three snapshot copies at a time, and are linked to a specific storage array.

When a backup or analysis is complete, the system has been set to re-attach the snapshot at the secondary site and re-synchronize with the primary site. “FlashSnap saves between four and eight hours in time re-mirroring images,” Hughes says. “Our whole backup solution is handled by one staff member in under two hours each week. It is fully automated with snapshots facilitated by Veritas Volume Replicator, coupled with checkpoints made with Storage Foundation FlashSnap option.”

#### Boosting customer satisfaction

Deploying Symantec software has enabled Global Crossing to increase uptime, meet its SLA requirements, and deploy cost-effective solutions for managing databases between its two database locations. In addition, Global Crossing has achieved its recovery point objective (RPO) and recovery time objective (RTO), with no unplanned downtime in the last four years. Backup and recovery can be managed by one member of Hughes’s team, who spends less than five percent of his time each week doing so. Meanwhile, the IT group is successfully managing storage growth of over 40 percent a year.

Says Hughes, “Veritas Storage Foundation and Volume Replicator allow us grow, shrink, or reorganize our storage capacity online, on the fly, without affecting our service levels or interrupting data access. In an industry where customers require utility-class reliability, that’s a competitive necessity.”

#### Achieving a lower TCO

It’s interesting to note that Global Crossing’s IT department has been able to deliver these results using lower cost Serial-ATA (SATA) storage architecture. “Most in IT use SATA for second-tier storage,” Hughes comments, “but we’ve found that it can work well as primary in some cases. In our environment, it’s fast enough and redundant enough for most of our applications.” Hughes notes further that he can purchase SATA hardware for about 80 percent less than standard rack storage. “You can easily pay five or six times as much as we did for the same amount of storage, and it would take up four times the rack space and use six times the power.”

The heterogeneous support in Storage Foundation and Volume Replicator allow Global Crossing to use the same datacenter availability software

infrastructure to manage disparate types of storage systems. With the heterogeneous support, Global Crossing would need to design, implement, and manage separate software infrastructures. To help sustain high availability and reliability, Global Crossing has a Veritas Basic Support agreement; Veritas Technical Support delivers Web-based and help desk support through the agreement.

“Our Symantec solutions work extremely well,” Hughes concludes. “They’ve been highly reliable, have a proven track record, and are very stable. Technical support has been good. And I don’t know any other products that scale as well as Symantec availability products.”

## SOLUTION AT A GLANCE

### Lower Cost

- 80% lower storage costs by migrating to tiered storage environment that includes Sun StorEdge disk arrays and AC&NC Jetstor SATA arrays

### Availability

- 99.99 % uptime achieved to meet SLAs

### Scalability

- 40% annual growth in backup data accommodated while reducing IT staff time for backups

### Productivity

- 4 hours to 8 hour reduction in re-mirroring storage images utilizing Storage Foundation FlashSnap option
- Backups handled by one IT staff member, who spends approximately 5% of his time managing backup processes each week

### Business Continuity

- 66% reduction in Oracle database recovery time, from an estimated 60 minutes to approximately 20 minutes using Checkpoint feature in Storage Foundation; also promotes data integrity over tape-based recovery that would result in data several days old
- Able to complete datacenter failover migration in 10 minutes