

## Mirror Image Internet

### FAST FACTS

#### Company

Mirror Image Internet

#### Industry

Technology

#### Geography

Americas

#### Challenges

- Verify the accuracy of the network in balancing server load
- Scale up load on the network to handle peak volumes
- Verify performance on multiple and diverse operating systems, servers and browsers

#### Solution

- Borland® SilkPerformer®

#### Results

- Improved ability to ensure application performance and eliminate bottlenecks
- Easier, proactive diagnosis of performance anomalies for better user experience
- n Increased development efficiency through automated testing

### COMPANY

Mirror Image Internet ensures application reliability and availability for its customers around the globe with its Content Access Point® (CAP) platform. This enterprise-class Internet infrastructure for global content delivery combines an optimal mix of connectivity, processing power, storage and control. With massive facilities located around the world, the CAP network leverages the highest concentrations of end users and network convergence, providing a platform for the company to deliver a range of value-added services, from content distribution to media streaming and managed caching. Mirror Image Internet is headquartered in Woburn, Massachusetts.

### CHALLENGES

Carl Gerstle, senior QA engineer in the performance test group at Mirror Image, described the company's services: "With our instaContent Global Distribution Service and FireSite Content Distribution Service, we provide a content delivery solution that offloads the need for our customers to deliver graphical content. Delivering graphical content is a very resource-intensive function; it can require extensive infrastructure to provide the type of online experience our customers want for their customers. Instead, we use our CAP network to provide bandwidth and content delivery services that enhance Web site reliability—and save our customers a lot of money in the process."

Mirror Image's QA group must support numerous environments. Brian Hannon, director of Quality Engineering who leads the test group, explained, "We have to support many different technologies because our customers could use any of them. Right now we support three versions of both Linux® and Windows® 2000, one each of both Solaris® and Windows NT®, and seven versions of Apache™. On the browser side, we have 12 versions to support—including all versions of Internet Explorer®, Netscape® Navigator and Opera."

### SOLUTION

Both Gerstle and Hannon had used the Borland® SilkPerformer® testing solution at a previous job, so when they came to Mirror Image, they brought in Borland SilkPerformer as their trusted tool.

Hannon explained the benefits obtained with Borland SilkPerformer, "Initially the toughest issue we faced was that of trying to emulate any possible worldwide IP address coming into our environment. We also needed to be able to check the validity of the calculations made by our software for both server load and in directing the IP address to the closest geographical server location. Borland SilkPerformer helped tremendously by allowing us to spoof or perform IP multiplexing to emulate browser users coming from specific IP addresses. In addition, it allowed us to write very complex code to emulate our functionality.

"The test environment and script language of SilkPerformer are rich enough to allow us to do all of this," continued Hannon. "We ended up testing 55,000 IP addresses out of 4 billion selected. We were able to run a full-blown test and verify proper functionality in 8 minutes."

“Borland SilkPerformer has helped us proactively identify bottlenecks, provide structured load and uncover the causes of system crashes.”

— Carl Gerstle, senior QA engineer, Mirror Image Internet

## RESULTS

Gerstle described a related issue that Borland SilkPerformer helped Mirror Image handle: “We had a complex black-box problem in our application. Given a user’s IP address, our software has to be able to pick the best content server for that user. The algorithm we use to do this was the black box; we did not have access to the code. Yet we were able to emulate the algorithm and pull extensive prerun data into SilkPerformer. We then compared the results obtained directly from our software with the results we obtained through our tests—and they were identical. The developer’s algorithm produced exactly the results we got with Borland SilkPerformer. That gave us tremendous confidence in the accuracy and integrity of our application.”

Borland SilkPerformer has helped Mirror Image realize other benefits as well. Gerstle explained, “We run long-term tests, as much as 60 to 80 hours. During these runs, we ramp up user load over time, or hold users steady and then suddenly spike them up. The ability to provide real-world spikes and peak load has been invaluable. Borland SilkPerformer allows us to see very detailed footprints of the user experience. With the comprehensive information captured by SilkPerformer, we can see what was occurring prior to any anomalies. We use the wrt files and can log to the millisecond what each user was doing. Time and again, this insight into system performance has helped us to really understand failures—and be able to solve them. Borland SilkPerformer has helped us proactively identify bottlenecks, provide structured load and uncover the causes of system crashes.”

The Mirror Image QA group also uses the same set of scripts to test all browsers. Hannon described the scripts the group has created for browser testing, “We emulate all of the canned browsers in Borland SilkPerformer; instead of performing 12 different runs with all the browsers, we ‘round robin’ through them. This is a very efficient way for us to test: We use one set of scripts, yet have the assurance that we can accurately test all 12 browsers we support.”

Gerstle and Hannon emphasized the reliability Borland SilkPerformer provides. Hannon elaborated, “Other tools we have looked at over the years have not always produced accurate results. The accuracy of Borland SilkPerformer is impeccable. We know we can count on the results we obtain.”

An unexpected benefit of using Borland SilkPerformer emerged within Mirror Image. An atmosphere of enhanced collaboration has grown between the development and QA groups. Both Gerstle and Hannon attribute that to the use of Borland SilkPerformer. Gerstle explained, “When development saw the kinds of results and information we were able to obtain with SilkPerformer, they became very interested in working more closely with us. Today they have all been trained on Borland SilkPerformer and even use it to test their code. There is no ‘us versus them’ mentality here. This is important for lots of reasons—the most significant of which is that we are working together efficiently toward the same goals.”