



Performance to Spare: Diskeeper Keeps CrystalTech Web Hosting at the Head of Its Pack

By: Carol Ellison

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As one of the first Microsoft Windows Shared Hosting Specialists, CrystalTech Web Hosting has grown to be one of the largest and best-known web hosting companies in the world. Founded in 1997 by Arizona programmers Tim Uzzanti and Mike Baker, the company quickly established an enviable reputation among web developers for the reliability of its network and the breadth of its applications. That reputation paid off in referrals that put CrystalTech on a fast track of growth spurred by a great deal of customer satisfaction and very little advertising. “About 75 percent of our customer base learned of us through word-of-mouth,” said Jonathan Thompson, Server Operations Manager for the company. “We’ve worked very hard to gear ourselves to the development community and have worked very hard on doing primary web hosting.”

For Thompson’s department, that work focuses on ensuring that the company’s dedicated and internal servers deliver the 24/7/365 reliability guarantee on which CrystalTech stakes its reputation. Diskeeper Enterprise Server plays a pivotal role in keeping the servers’ hard disks defragmented and operating at optimum levels.

In 2004, the Server Operations department was created to investigate the software and strategies needed to carry the company into the future. “When this program was created, we were at a turning point,” said Thompson. “Every

business goes through several turning points and we were getting to the size where we needed to be implementing some new practices to maintain our servers' uptime and to maintain customer loyalty and customer satisfaction.”

The challenge

Tops on the “to do” list was finding a new utility to replace Windows built-in defragmenter. Activity on the servers was outpacing the ability of that utility to keep hard drives defragmented and the servers running at top efficiency. “The more customers and web sites you put up on the server, the more people you have uploading and downloading files. That fragments the hard drive quickly,” Thompson explained.

It was a situation that demanded immediate attention. “We started research on a defragmentation application that would happily replace the built-in tool for Windows 2003 Server and Windows XP

Professional,” said Thompson. “Our servers have to be online 24/7. We don’t have a choice.”

CrystalTech had a four-hour time-frame for scheduled maintenance. “That utility just wasn’t able to keep up with our customers,” said Thompson.

Even after scheduled maintenance, data remained fragmented and the servers were not performing optimally. “We were seeing many servers that were very much in need of defragmentation.

Fragmentation on some of the drives was just astronomical,” he added.

“Fragmentation still registered as high as 98 percent on some servers. The impact on customers was a drop in performance to only about one-third of the expected level. With some of the older machines we were actually having to e-

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mail the customers and say ‘we are taking your server offline for maintenance. We were having to take customer’s machines offline far too often.’”

CrystalTech could not afford to wait for customers to complain in order to identify problems on the servers. It needed a defragmentation tool that, in addition to keeping the hard drives defragmented and running optimally, could deliver a fragmentation analysis on every disk drive on every machine on the network and that would alert administrators to potential problems before they occurred.

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The Solution

Based on testing he had done with Diskeeper at previous company, Thompson was confident it would deliver the results that CrystalTech required. “I knew that it was the experience I wanted to look at first but we also reviewed many other utilities. We looked at a lot of different applications.”

Over the next six months, CrystalTech tested and evaluated five different applications. A key criterion in the evaluation was how well the utilities would work with legacy hardware. “With every IT company,” Thompson noted, “you’re always going to have a few machines with old hardware that you don’t swap out because that’s what the customers want to use. They want those legacy applications.”

When the tests were complete, the results on all fronts were stunning.

- Where the built-in often took six to eight hours to defrag a hard drive, Diskeeper completed the process in under two hours.

- On newer hardware, CrystalTech saw almost no performance degradation when Diskeeper was running.
- Out of all the utilities that were researched, Diskeeper was the only application that effectively defragmented the servers' hard drives with no noticeable impact on performance on the performance of CrystalTech's mail servers, as well as its SQL servers.

"We were able to schedule Diskeeper at optimal times and completely defragment the hard drives with very little performance loss to the old hardware," said Thompson. "Some of the other software we were testing would take those machines to their knees"

When the results were in, the decision was clear. Thompson presented the performance data on the utilities that were tested to the company owners. "They looked at the reports and said 'great! Buy it!' It was one of the easiest things that I've ever had approved to purchase."

CrystalTech continues to evaluate new defragmentation utilities on a yearly basis but Diskeeper remains the runaway leader. It is the only defragmentation product CrystalTech has found that can operate in its high stressed environment with little to no impact on the servers. "Diskeeper continues to be the best application to use because we don't have to watch it and because we know that it leaves the file system alone as it's being used," said Thompson.

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avoiding problems before they arise. Diskeeper has been set to run 24/7 and disks are defragmented as fragmentation occurs. "That," said Thompson, "has been great."

"Diskeeper is able to effectively utilize available system resources to do what it needs, quickly and easily throttle itself from high usage to low usage and get the job done in the timeframe we needed it," said Thompson.

Diskeeper's I-FAAST™ (Intelligent File Access Acceleration Sequencing Technology), which closely monitors file usage and re-sequences commonly used files to provide the fastest possible access, scored additional boosts in customer satisfaction with the gains in performance it produced. According to Thompson, it "works perfectly with files that are being accessed by customers or the operating system."

The Return

"Because of Diskeeper's performance, we are able to add more domains, more POP3 e-mail accounts, and more SQL Databases to our servers," said Thompson. "Diskeeper has the lowest impact on system performance of any application we use, and has provided a much greater ROI than any other maintenance application we have on our servers."

In March, 2007, CrystalTech forged a partnership with Diskeeper Corporation to deploy Diskeeper with InvisiTasking across its entire array of shared servers, including all of its mail and database servers. Today, some 90 percent of the company's 4500 servers, including all its internal and shared servers, are defragmented automatically.

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Reporting features in Diskeeper allow administrators to view disk activity and run reports on any server from a single enterprise console, allowing them to identify servers with deteriorating performance before problems arise.

On higher usage servers where customer usage is so intense that there are few interruptions in activity, the company uses Diskeeper's Smart Scheduling™ utility to schedule defragmentation as a task to conduct the process in non-peak hours. "They defrag once a night," said Thompson, "and it keeps the drives good for the day."

Thanks to Diskeeper, the company has been able to keep its older systems up and running for longer periods of time, keeping customers who need that legacy equipment very happy. "We had been finding that, in many cases, we would have to take those systems offline and disable those resources so that we could defragment the hard drive," said Thompson. "With Diskeeper, we didn't have to do that anymore. We were able to provide a greater uptime for that customer base."

As an authorized Diskeeper reseller, CrystalTech has used Diskeeper to produce new revenue streams by offering defragmentation in its service agreements for dedicated servers. "In several cases we have had customer dedicated servers where the drives were having issues reading and writing to the system drive, passing NTFS errors," said Thompson. "After installing Diskeeper and allowing the application to run for several hours, system performance was increased and we ceased to receive NTFS errors from the volumes." Thompson estimated that customers are presently running Diskeeper on 60 to 70 machines and said CrystalTech is planning to include Diskeeper in CrystalTech's suite of managed services on dedicated servers.

"When we run into a situation where the server has a large number of files," said Thompson, "we'll suggest to them, you should consider getting Diskeeper because your server is considerably slower than what it should be." Clients can use Diskeeper's Disk Performance Analyzer for Networks, available at no cost as

an Internet download to do disk analyses and produce reports that show the current fragmentation, the defragmentation that Diskeeper could provide, the current number of reads and writes, and what performance gains they could achieve by using the defragmentation tools in Diskeeper. “A great selling point of the application has been that we’re able to show these customers that their hard drive is having a hard time and, if we install Diskeeper, it’s going to fix a lot of the issues that they’re seeing,” said Thompson.

When CrystalTech began using Diskeeper they had about 50 dedicated servers and 150 servers on their shared network. Today, they have about 4000 dedicated servers and more than 500 shared servers. That stunning growth would have greatly taxed the ability of CrystalTech’s network

administrators to maintain the network if not for Diskeeper’s ability to defragment the servers’ disk drives and maintain optimal performance.

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“Previously, administrators had to watch and baby sit the defrag process. Many of the other applications that we’ve looked at in the past were pretty much the same way. What has helped us so much is the amount of time that Diskeeper saves our administrators from having to check for fragmentation.” Thompson remarked.

That saves CrystalTech a tremendous number of man-hours, freeing administrators and technicians to handle other matters. “In the past,” said Thompson, “five and six hard drives a night were failing because they were so fragmented.” Since the company began using Diskeeper, hard drive failures have dropped to a minimum and when they do occur, said Thompson, “it’s due to hardware failure. It’s not due to overload of the drives which is what we were seeing in the past.”

Diskeeper has enabled CrystalTech to triple the size of its network and operate a far greater number of servers at greater efficiency. “We use Diskeeper on all

Shared and Internal Servers, all Management staff and offer it to our 4,000 Dedicated Customers,” said Thompson. “Because we’re able to defrag the drives effectively and efficiently, we’re able to add more customers and more sites to these servers. It’s really helped on our return because we don’t have to build as many new servers as we had to in the past. Instead

of putting 200 web sites on a server, we can put 250. Instead of 200 databases, we can put 250 databases. Instead of taking a server down to defragment it, we’re able to leave it online so that the customers can continue to use it 24/7 and we can still effectively defrag the hard drive.”

“It’s a complete return in our ability to leave the servers online longer,” said Thompson. “And because the majority of our customers come to us on referral, it fits our customer acquisition plans. We’re no longer running into issues due to fragmentation. The uptime we’ve been able to provide our customers is just great.”

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