![OpenDNS]

OpenDNS and SanDisk® Keep Zombies at Bay with Fusion ioMemory™ PCIe Application Accelerators

Solution Focus

- MySQL database
- Fusion ioMemory PCIe application accelerator

Summary of Benefits

- Accelerated processing time to deliver higher quality of service (QoS) to customers
- 63% reduction in processing time with Fusion ioMemory*

*Results based on comparison testing of processing time at OpenDNS.

"One of the advantages of working with SanDisk is that they're not only working on the hardware stack but are also working on software to optimize using that hardware."

**Levi Junkert,
Systems Engineer at OpenDNS**

![SanDisk a Western Digital brand]

Summary

OpenDNS provides a cloud-delivered, network security service for automated protection against advanced attacks for any device—laptop, smartphone, desktop, server, network—regardless of location. When there is a security threat, a delay in detection or response time could mean millions of dollars in damage to a client's systems. Deploying Fusion ioMemory™ PCIe application accelerators has improved the ability of OpenDNS to rapidly analyze and respond to increasing large-scale attacks.

Background

Keeping people—and their devices—secure is imperative today. However, the question now is how to ensure their security and protect them as they travel the world. Typical systems security comes in a box that resides in a server room at a company. David Ulevitch started OpenDNS in 2005 after identifying a need for a better-performing, more secure DNS service than what was previously available. OpenDNS is a cloud-based security company that protects employee data both at the headquarters and at mobile and remote locations.

Through its Umbrella product, OpenDNS protects people working on-site at the company as well as people who travel. Umbrella blocks malware, botnets, and phishing over any port, protocol, or app. It also detects and contains advanced attacks before they can cause damage.

"We provide Internet security for large corporations," explained Levi Junkert, Systems Engineer at OpenDNS. "It used to be that you were tied to a box that you installed inside your server room, which would protect you from security attacks. However, today, to address a more mobile workforce, such as a salesforce that is traveling all around the world, we have expanded this security to provide protection even when employees are mobile."

OpenDNS provides DNS servers that translate web site addresses into IP addresses, and keeps track of which sites users are visiting. Client traffic is routed through OpenDNS servers to ensure detection of any malicious activity. "Internet traffic can be monitored or picked up by someone else," continued Junkert. "So that needs to be protected. For example, a zombie computer is one that has been hijacked by some kind of software process. This process can then be used as a gateway to maliciously send traffic to other places. In addition, when you do something online, that information is actually stored on a disk. That is what I work on—making sure that your data is stored and that it is protected. We sell you a software package that protects you by routing all of your traffic through our servers. And from there, we protect all the traffic coming in and out."

OpenDNS conducts considerable analysis of Internet traffic and can detect security attacks and hacking activity before it can compromise a client system. The service can then block malicious web sites from accessing client devices. In addition, OpenDNS can keep devices from accessing a malicious site that has been detected, without users realizing that they are being protected.

"We protect you no matter where you're at," explained Junkert. "So let's assume that you are on your cell phone, and you are looking through some websites as you're leaving your place of business. On your trip home, you're going through all these different cell phone towers. Since you have our software installed on your cell phone, we'll still be protecting you even though you're not at your place of business anymore."

The Challenge

When there is a security threat, there is no time to delay. "Seconds really matter when you're actually trying to prevent an attack," continued Levi. "Our database performance determines how fast we can actually react to large-scale attacks. If we're not able to respond quickly, an attacker might actually break through, costing a client millions of dollars."

One process that OpenDNS was running was indeed taking far too long. "We need to make a decision quickly, and that is done by reading data rapidly and with low latency. We do this by building very efficient, fast systems—with both hardware and software."

This service level commitment resulted in OpenDNS seeking a new solution to the latency issue.

The Solution

To keep up with the ever-changing security environment, the team at OpenDNS does considerable research and strives continually to increase the efficiency of software processes. "We spent a lot of time optimizing different pieces of our software to be able to deliver a product that is faster. Eventually, we decided to try the Fusion ioMemory PCIe application accelerators. And they really sped up our process. We did a study across multiple PCIe vendors and SanDisk definitely won the competition," confirmed Junkert.

OpenDNS does not tolerate a delayed reaction to security threats. When they are confronting a large-scale attack or security threat, seconds can mean the difference between safety—keeping the bad guys out—and having a full-scale breach. "We can see from our initial testing runs that using Fusion ioMemory SX300 PCIe application accelerators may increase our ability to react to security threats much faster than with our deployed solution."

SanDisk combines unique expertise in hardware, software, and application architecture to solve performance challenges and advance applications into the flash age. Fusion ioMemory PCIe application accelerators deliver extremely low read and write latency, as well as high IOPs to improve application performance.

The Result

When OpenDNS started working with Fusion ioMemory PCIe cards, the team saw the benefits right away.

"We have a process here at OpenDNS that was taking about 400 seconds to complete," said Junkert. "Before we actually had the Fusion ioMemory PCIe cards to work with, this amount of time could directly impact customers. So we tested the process with the Fusion ioMemory PCIe cards, which decreased the running time of this process from 400 seconds down to 150 seconds."
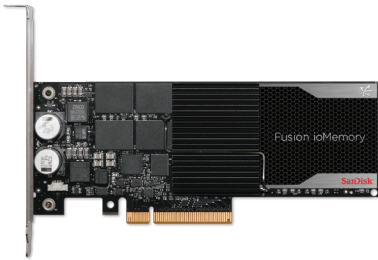
The bottom line is that by deploying Fusion ioMemory PCIe application accelerators, OpenDNS' clients will have a better experience using the OpenDNS products and will be better protected. "Through this partnership, we're able to serve our customers even better."

SanDisk®
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SanDisk Products

• Fusion ioMemory™ SX300 PCIe Application Accelerator

OpenDNS Products

• OpenDNS Umbrella
• Investigate
• BGPmon

Fusion ioMemory™ SX300 PCIe Application Accelerator

Partnership/Future

SanDisk takes a collaborative approach, engaging ecosystem partners and end customers to solve business problems through innovative flash solutions. "One of the advantages of working with SanDisk is that they're not only working on the hardware stack but are also working on software to optimize using that hardware," commented Junkert.

Members of the OpenDNS team have been working with Fusion ioMemory PCIe cards for more than six years. SanDisk continues to add functionality to the cards, as well as provide ongoing support to ensure the cards perform at optimum levels. "Working with the SanDisk team has been pretty awesome. Having a relationship with someone at SanDisk who is able to answer my questions and to help me customize our infrastructure—we can actually make the cards perform much better to serve our needs."

Now that OpenDNS has achieved success with Fusion ioMemory PCIe cards, they are starting to notice other processes in their software stack that could also benefit from increased efficiency, which will enable the company to handle additional customers.

"I think it's great that SanDisk and OpenDNS are working together," said Junkert. "We're helping each other build better products for our customers and make our software much quicker. Through this partnership, we're able to bring more products to market for our customers and protect them better."

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At SanDisk, we're expanding the possibilities of data storage. For more than 25 years, SanDisk's ideas have helped transform the industry, delivering next generation storage solutions for consumers and businesses around the globe.