

Lab Testing Summary Report

September 2009
Report 090915

Product Category:
Security Appliance

Vendors Tested:



Products Tested:

**Crossbeam X80
with Sourcefire 3D
Sensor Software**



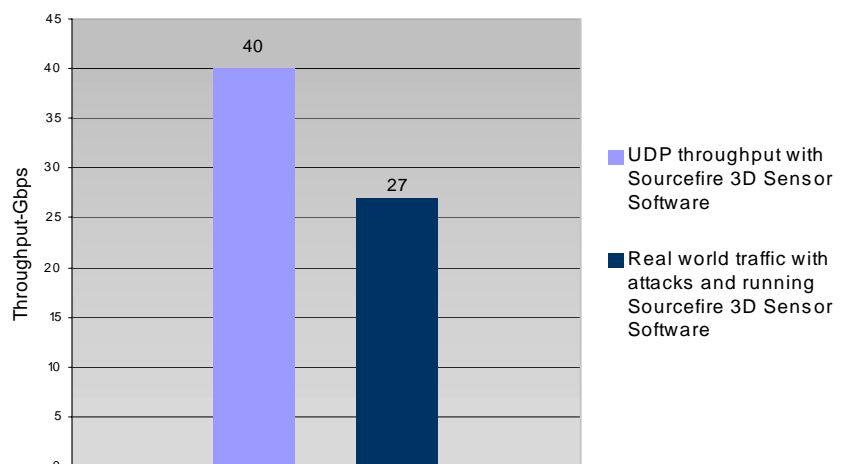
Key findings and conclusions:

- Sourcefire 3D Sensor Software running on a fully-populated Crossbeam X80 platform provides 40 Gbps throughput with no traffic loss and supports full inspection capability
- Crossbeam-Sourcefire solution shows minimal impact on throughput performance during conditions with high-attack traffic
- True single-chassis high availability without single-point of failure is supported by the Crossbeam-Sourcefire solution
- Integrating Sourcefire 3D Sensor Software with Check Point Security Gateway R70 on the Crossbeam X-Series platform provides 23 Gbps throughput

Crossbeam-Sourcefire Solution was evaluated by Miercom for scalability, throughput performance, high availability, and multi-application capabilities. The testing objective was to validate the integration of security service applications, while maintaining high throughput performance.

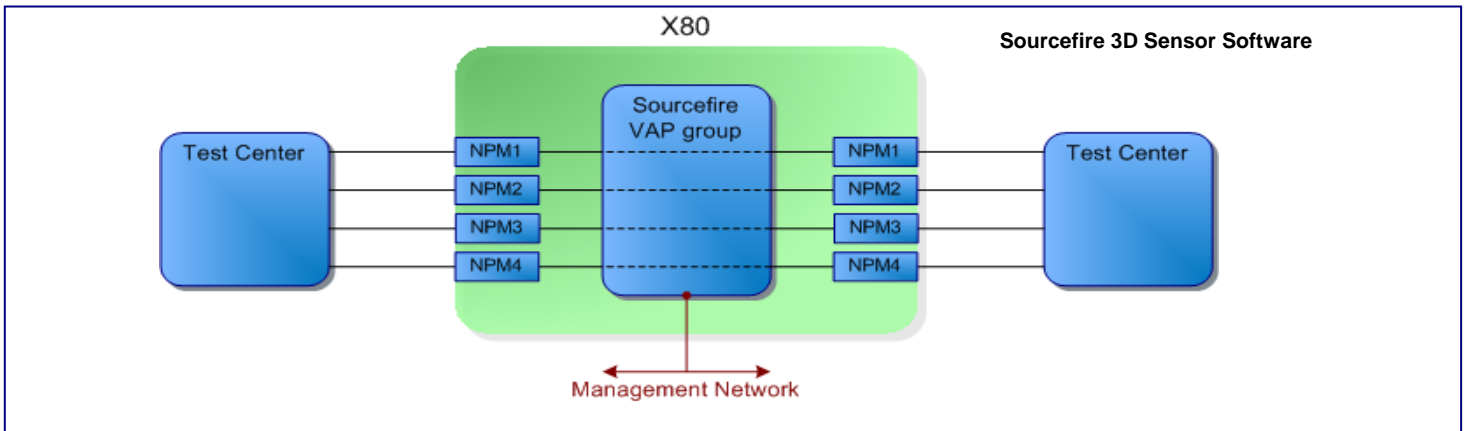
Results show that the Crossbeam-Sourcefire solution continues to provide full inspection capabilities, while maintaining up to 40 Gbps of throughput, see [Figure 1](#). Using real-world traffic scenarios, the Crossbeam-Sourcefire solution provided 27 Gbps of throughput. Optimal performance prevailed when attack traffic was added, with minimal impact on throughput and system performance. When multi-application capabilities were tested, integrating Check Point Security Gateway R70 and Sourcefire 3D Sensor Software, the X80 platform delivered a converged firewall and IPS solution throughput that was recorded at 23 Gbps. (*continued on page 3*)

Figure 1: Crossbeam-Sourcefire Performance



The Crossbeam X80 platform configured with eight APMS and Sourcefire 3D Sensor Software delivered 40 Gbps of UDP traffic throughput without attacks; 27 Gbps throughput was achieved using real-world traffic with attacks.

How We Did It

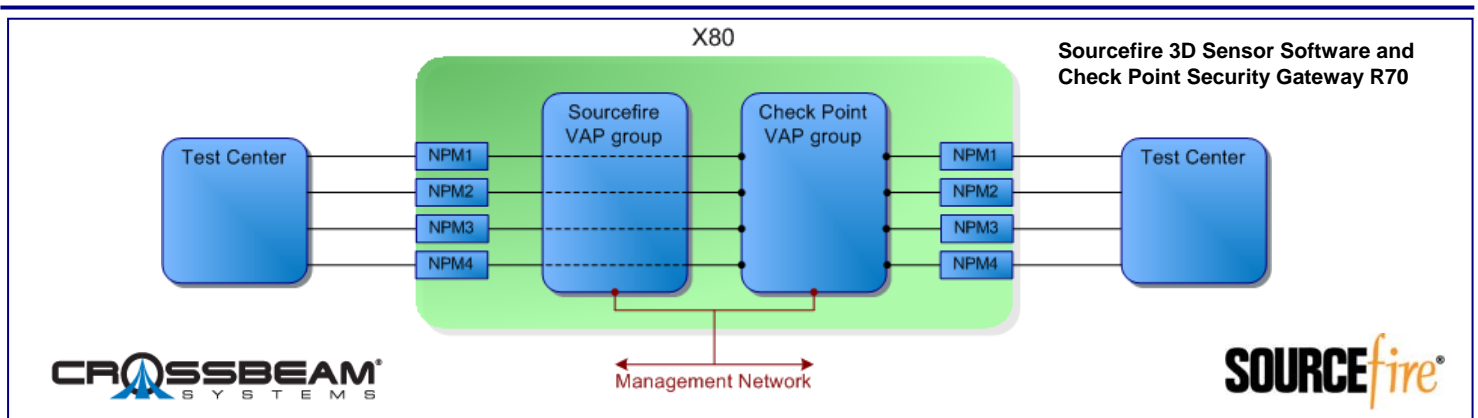


Miercom tested the scalability and throughput performance of Sourcefire 3D Sensor Software running on the Crossbeam X80 platform under different real-world traffic conditions with varying packet rates, and while injecting malicious traffic. High-availability features were tested with carrier-class level of high availability and Service Level Agreements (SLAs) in mind. Performance tests with multiple instances of security applications running Sourcefire 3D Sensor Software in conjunction with Check Point Security Gateway R70 (www.checkpoint.com) were also conducted.

Miercom used a fully-configured Crossbeam X-Series Security platform to conduct the test. Crossbeam X-Series platform consists of a highly-available chassis with Network Processor Modules (NPMs) which create a high performance switching fabric consolidating layer 2 switches and load balancers. The Application Processor Modules (APMs) provide processing power for network security software applications. The Control Processor Module (CPM) provides the key management interfaces and capabilities to the rest of the chassis. A fully configured X-Series chassis supports up to four NPMs, eight APMS, and two CPMs.

All tests were conducted with Crossbeam APM-8650s, NPM-8650s, and CPM-8600s, Crossbeam Systems XOS 8.5.2 and Sourcefire 3D Sensor Software 4.8.2. Spirent TestCenter (www.spirent.com) and Spirent Avalanche/Reflector 2900s were used to generate traffic (both UDP and mixed protocol) to simulate real world Internet conditions. The real-world traffic mix consisted of a blend of HTTP, DNS and SMTP traffic. Packet captures of common exploits and attacks were added to the traffic mix at 5,000 pps, using packet-capture replay tools. All tests were run with four NPM blades and a varying number of APMS to validate scalability.

UDP throughput tests were conducted with 1518-byte frames, and repeated for one, four and eight APM blades in the X80 platform. High availability tests were conducted by failing an APM blade, NPM blade and an NPM interface. The system processed 30 Gbps of UDP traffic during the High Availability testing scenario.



To test the multi-application capabilities of the X80 platform, a fully-loaded Crossbeam X80 was configured with four APMS running Sourcefire 3D Sensor Software and four APMS running Check Point Security Gateway R70. In this test scenario, traffic was first inspected by Check Point's Security Gateway R70 as the network firewall, and then the traffic was distributed to Sourcefire 3D Sensor Software for intrusion prevention validation. This dual-layer security deployment is extremely common for both service providers and enterprises.

The tests in this report are intended to be reproducible for customers who wish to recreate them with the appropriate test and measurement equipment. Contact reviews@miercom.com for additional details on the configurations applied to the system under test and test tools used in this evaluation. Miercom recommends customers conduct their own needs analysis study and test specifically for the expected environment for product deployment before making a selection.

(continued from page 1) The X80 platform proved to support true single-chassis high availability with fast recovery after a failure. Less than 0.02% of the frames were dropped during an observed failure, and automatic recovery was provided by Crossbeam's high availability features.

Performance

The objective of this test was to validate the maximum performance of the Crossbeam-Sourcefire solution passing UDP traffic without attacks. The X80 platform was configured with four NPMs and eight APMs. Tests were conducted using Spirent TestCenter configured to send 1518-byte UDP packets. The traffic profile for this test case consisted of clean UDP traffic without attacks. These results validate that a fully-loaded Crossbeam X80 platform running Sourcefire 3D Sensor Software can provide up to 40 Gbps of fully-inspected throughput performance.

Mixed Protocol Real-World Performance

To evaluate the performance of Crossbeam X80 platform running Sourcefire 3D Sensor Software under real-world conditions, we subjected it to a blend of traffic representative of Internet traffic, and then injected attack traffic into this mix.

With one APM running Sourcefire 3D Sensor Software, throughput reached 3.38 Gbps under real-world traffic conditions without any attack traffic. When the attack traffic was added to the mix, throughput was minimally impacted—reduced to 3.28 Gbps.

The Crossbeam-Sourcefire performance shows less than 2 percent reduction under attack traffic conditions while still detecting and alerting on all attacks. The testing shows that a fully-loaded Crossbeam X-Series platform with Sourcefire 3D Sensor Software will support up to 27 Gbps of throughput in a real-world traffic scenario, similar to customer environments.

Solution Scalability

One APM running Sourcefire 3D Sensor Software achieved 3.38 Gbps with clean traffic and 3.28 Gbps when attacks were added. Repeating this test with two APMs showed that throughput reached 6.74 Gbps with clean traffic, and 6.59 Gbps with attack traffic. With each APM added to the Crossbeam X80

platform, the overall performance increased by at least 3.3 Gbps, maintaining real-world traffic conditions while properly identifying and blocking attack traffic.

Performance scales linearly with the Crossbeam-Sourcefire solution when the number of APMs is increased. See [Figure 2](#) on page 4.

Redundancy and High Availability

Offering continuous network operations is essential and expected for both enterprises and service providers. Failover of platform blades without impacting traffic is especially critical for service providers who depend on 24x7 operations with dedicated SLAs. With a single chassis, the Crossbeam-Sourcefire solution proved to be fully redundant without a single point of failure.

To conduct the redundancy testing, the Crossbeam X80 platform was loaded with four NPMs, eight APMs and one CPM, with Sourcefire 3D Sensor Software running on all APMs. Failures were initiated while passing 30 Gbps of UDP traffic. Throughput degradation, frame loss and recovery time were recorded in order to determine the performance impact caused by the failure.

For the APM and NPM tests, we physically removed each blade from the chassis to simulate a module failure. In both cases, throughput performance was maintained with frame loss of less than 0.01%. For a NPM failover, all traffic was instantaneously switched to another NPM module. In the case of the APM failure, traffic processed by the failed APM was immediately distributed across the other APMs in the chassis.

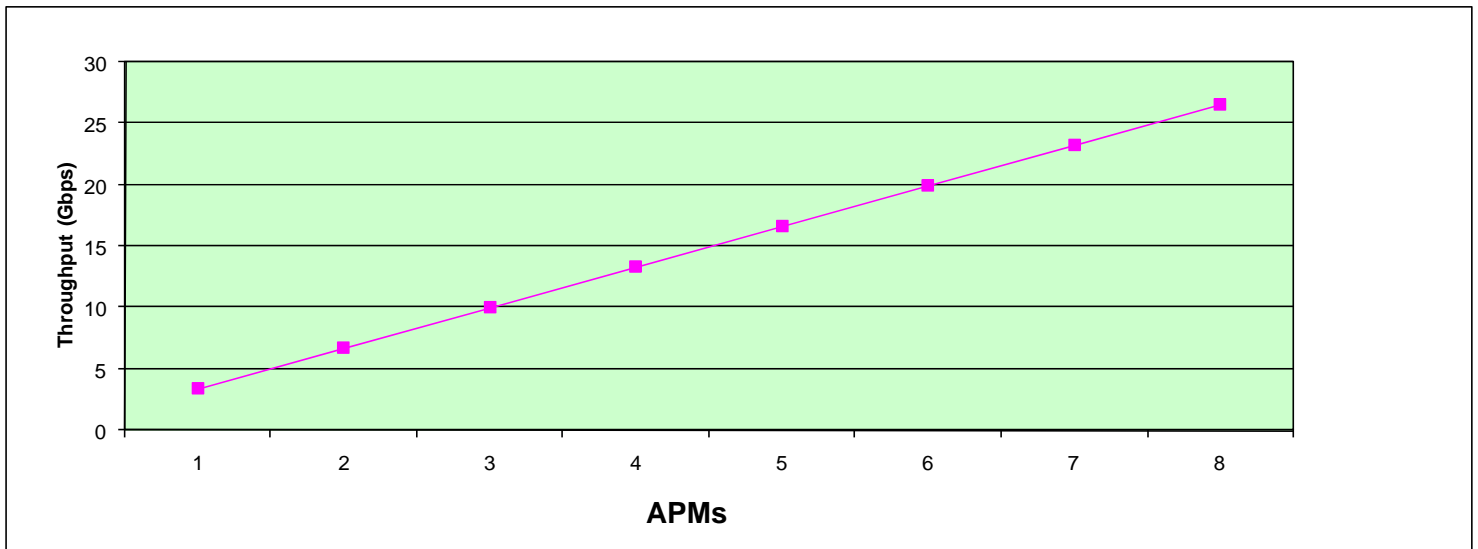
The unique redundancy and resilience features of the X-Series platform provide a resilient single box highly available solution that continues operations in the event of failure.

Multi-Application Performance

Crossbeam's multi-application capabilities were tested using the Sourcefire 3D Sensor Software in conjunction with Check Point Security Gateway R70.

An X-Series chassis with four NPMs and eight APMs was used for these test scenarios. Four of the APMs ran Check Point Security Gateway R70 and four APMs ran Sourcefire 3D Sensor Software. All traffic that passed through the Crossbeam chassis was inspected by both security applications.

Figure 2: Performance Scaling using Real-World Traffic



Crossbeam-Sourcefire solution can achieve 27 Gbps real-world traffic throughput with eight APMs.

With both applications running on the X-Series platform, the combined network security solution delivered 23 Gbps of throughput. We also observed that scaling performance or adding security applications was accomplished easily by entering a few commands using the Crossbeam command line interface. Crossbeam's ability to consolidate applications eliminates the complexities involved in deploying multiple security appliances.

Bottom Line

Sourcefire 3D Sensor Software running on the Crossbeam X80 platform offers scalable performance up to 40 Gbps while providing carrier-class redundancy and single-solution high availability. The X80 platform is tightly integrated with third-party applications such as Sourcefire 3D Sensor Software, allowing the customer to choose the best security applications without sacrificing high performance, scalability or reliability.

The Crossbeam solution provides a hardware platform that facilitates optimization, consolidation, virtualization and integration of third-party security applications. By consolidating application processing and providing virtualization capabilities, the solution looks to offer a modular security platform eliminating appliance sprawl, and will help to reduce network operating expenses.

About Crossbeam Systems

Crossbeam's Next Generation Security platform facilitates the consolidation, virtualization and simplification of security services delivery, while preserving the choice of best-of-breed security applications. Customers choose the Next Generation Firewall and Secure Web Gateway to intelligently manage risk, accelerate and maintain compliance, and protect their businesses from evolving threats. For more information, visit www.crossbeam.com.

About Sourcefire

Sourcefire, a world leader in Cybersecurity solutions, is transforming the way Global 2000 organizations and government agencies manage and minimize network security risks. Sourcefire's IPS and Real-time Adaptive Security solution equips customers with an efficient and effective layered security defense – protecting network assets before, during and after an attack. Through the years, Sourcefire has been consistently recognized for its innovation, industry leadership by customers, media and industry analysts-with more than 40 awards and accolades. Today, the name Sourcefire has grown synonymous with innovation and network security intelligence. For more information please visit <http://www.sourcefire.com>.

Miercom Performance Verified

The Crossbeam–Sourcefire solution is an integrated application that provides high performance, scalability, and reliability. It provides up to 40 Gbps UDP throughput and 27 Gbps of real world traffic throughput, and allows customers to choose the best security applications.

In recognition for completion of the hands-on testing and independent analysis conducted by Miercom, the Crossbeam X80 platform running Sourcefire 3D Sensor Software has earned Performance Verified by Miercom. Testing conducted in this report is deemed repeatable and accurate.



Crossbeam X80 platform



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