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Arista Networks, Fulcrum Microsystems and Ixia collaborate on testing of high performance data center switches for cloud networking applications

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Joint Testing Proves Scalable 10-Gigabit Ethernet for Cloud Networking

SC09, PORTLAND, ORE. – Nov. 16, 2009 – Arista Networks, Fulcrum Microsystems and Ixia today announced the results of collaborative performance and scalability testing of 10-Gigabit Ethernet in a cloud computing environment. The results demonstrated high throughput and low latency for Arista Network's 7148SX switch using Fulcrum's FocalPoint FM4224 switch silicon. The 7148SX is one of the densest 10GE switches on the market today.

As the industry moves to Ethernet in the data center, questions have arisen about the best interconnect architecture. The results of these tests show that high density, low latency 10GE switches in logically flat network architectures can scale to meet large-scale applications. The European Advanced Network Test Center (EANTC) has validated the latency and throughput tests per RFC 2544, RFC 2889 (for unicast traffic) and RFC 3918 (for Multicast traffic).

Performed at Ixia's renowned **iSimCity** facility in Santa Clara, Calif., the testing measured the performance of the Arista **7148SX** 48-port 10GE SFP+ switch, which features Fulcrum's **FocalPoint FM4224**switch silicon. The tests used full line-rate, large-scale traffic running fully meshed and yielded results that validated the switch's ability to provide the low-latency and throughput performance for lossless data center Ethernet transmission. The test results showed "extraordinarily low latency" in the Arista switch—as low as 600 nanoseconds (min) between any two ports—and lossless performance for all frame sizes using IETF RFC 2544 and 2889 throughput test methodologies. This performance means scale-out environments can now get true non-blocking performance using the Arista 7148SX switches, as shown by the absence of packet drops in the RFC 2889 full-mesh test results. Complete test results can be found at: **7100 Series Performance Results**

With multicast traffic growing in importance in cloud networking applications, the tests showed that the Arista switch delivered at line rate per RFC 3918 mixed class and multicast-only throughput test cases with no packet loss.

In the multicast-only throughput and latency test case a minimum of 600 nanoseconds was recorded with average latency of 1273 nanoseconds and maximum latency of 1520 nanoseconds. Low-latency multicast performance is essential to many financial networks that need "fair" multicast transmissions where even a microsecond of early data delivery can mean an unfair trading advantage.

To deliver SAN-quality performance, lossless transmission is vital even when there is drastic over-subscription of a switch port. In additional demonstration where EANTC was not present, the Arista 7148SX switch showed the PAUSE and Priority Flow Control (PFC) features necessary to maintain lossless transmission on ports oversubscribed as much as 47-to-1 with streams of converged IP and storage traffic at rate and at scale.

"As high performance data centers move to flat network architectures in order to accommodate the increase in traffic associated with moving into the cloud, it becomes absolutely critical that these port-dense switches have the proper features to ensure reliable transmission of full line rate traffic," said Mike Zeile, president and COO of Fulcrum Microsystems. "This test data gives a real-world validation of the virtues of FocalPoint silicon, clearly demonstrating the features key to enabling dense, low-latency switches that scale without performance degradation."

"Today's cloud networking designs require ultra-low latency and non-blocking performance to deliver a robust platform that works for all applications," said Anshul Sadana, Vice president of Systems Engineering of Arista. "With the Arista platform, our customers are no longer worried about the network being a bottleneck."

"10GE continues to penetrate data centers as the prime technology to support low latency and high performance applications such as server virtualization, cloud computing and market data feeds," said Victor Alston, Senior VP of Product Development of Ixia. "We are proud to be able to provide superior 10GE test solutions with the performance, density and reliability required to validate the high benchmark set during this test."

Arista Networks will be showcasing its technology at booth # 249. Fulcrum Microsystems solutions will be on display in booth #335. Ixia will demonstrate its 10GE and data center Ethernet solutions at the Ethernet Alliance booth, #1259.

About Arista Networks
Arista Networks was founded to deliver cloud networking solutions for large datacenter and computing environments. Arista offers best-of-breed 10 Gigabit Ethernet switches that redefine scalability, robustness, and price-performance. At the core of Arista's platform is the Extensible Operating System (EOS™), a pioneering new software architecture with self-healing and live in-service software upgrade capabilities. Arista's team is comprised of experienced management and engineering talent from leading networking companies. Arista markets its products worldwide through distribution partners, systems integrators and resellers with a strong dedication to

partner and customer success. For more information, please visit **https://www.arista.com** or contact Arista at media@arista.com or 650-462-5000.

About Fulcrum Microsystems

Fulcrum Microsystems Inc. is a fabless semiconductor company that has developed the FocalPoint family of 10 Gigabit Ethernet (10GbE) switch/router chips for next-generation data center fabric designs. FocalPoint devices offer the industry's lowest latency combined with the fine-grained flow control and high throughput required for converged data center fabrics. With its ControlPoint network OS, Fulcrum offers a complete solution along with a worldwide ecosystem of partners from which storage and clustering system designers can drive adoption of 10GE as the fabric of choice for a fully converged data center. More information can be found at **www.fulcrummicro.com**. FocalPoint, TestPoint, VantagePoint and ControlPoint are marks of Fulcrum Microsystems. All other trademarks are owned by their respective companies.

About Ixia

Ixia is a leading provider of converged IP performance test systems and service verification platforms for wireless and wired infrastructures and services. Ixia's test systems are used by network and telephony equipment manufacturers, semiconductor manufacturers, service providers, governments and enterprises to validate the performance and reliability of complex networks, devices and applications. Ixia's multiplay test systems address the growing need to test voice, video and data services and network capability under real-world conditions.

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