Miercom

Measuring the Performance of Cisco's Next-Generation Data-Center Network Architecture

Switches can only grow so big. Data-center networks of the future will embody tightly meshed networks of many coordinated switches, connected by super high-speed optical inks, and behaving like a single giant switch.

Cisco has developed its answer to this coordinated, multi-switch future – an architecture it calls the Applications Centric Infrastructure or ACI. This architecture will build many switches into a scalable, highly resilient and logical whole for centralized and automated provisioning and management.

An Application Policy Infrastructure Controller is a centralized group-based policy controller used with ACI. The APIC is responsible for updating and provisioning change to endpoint locations, traffic patterns, applications, services and policies. It is typically also redundant and database synchronized.

What Was Measured

The ACI fabric tested consisted of more than two dozen high-capacity ACI leaf switches and four ACI spine switches, interconnected in a two-tier fabric architecture.

All of this was connected over nearly a thousand 10GE links. Throughput was measured between switch pairs across the fabric. Similarly, latency was measured for data traversing multiple fabric switches. Link failure, resiliency, failed-link convergence, and fabric recovery were also tested.

Key Findings

➢ ACI achieves 99+ percent of theoretical maximum throughput in end-to-end network testing.

➢ Multicast and full mesh performance over 960 line-rate 10GE links across 20 switches.

➢ Low and constant latency; average end-to-end latency under 8 μsecs.

➢ Fast convergence around failed links and switches. Failed controllers have no impact on data flows; no data is lost.

L2 and 3 Theoretical vs Actual ACI Throughput (Percent)
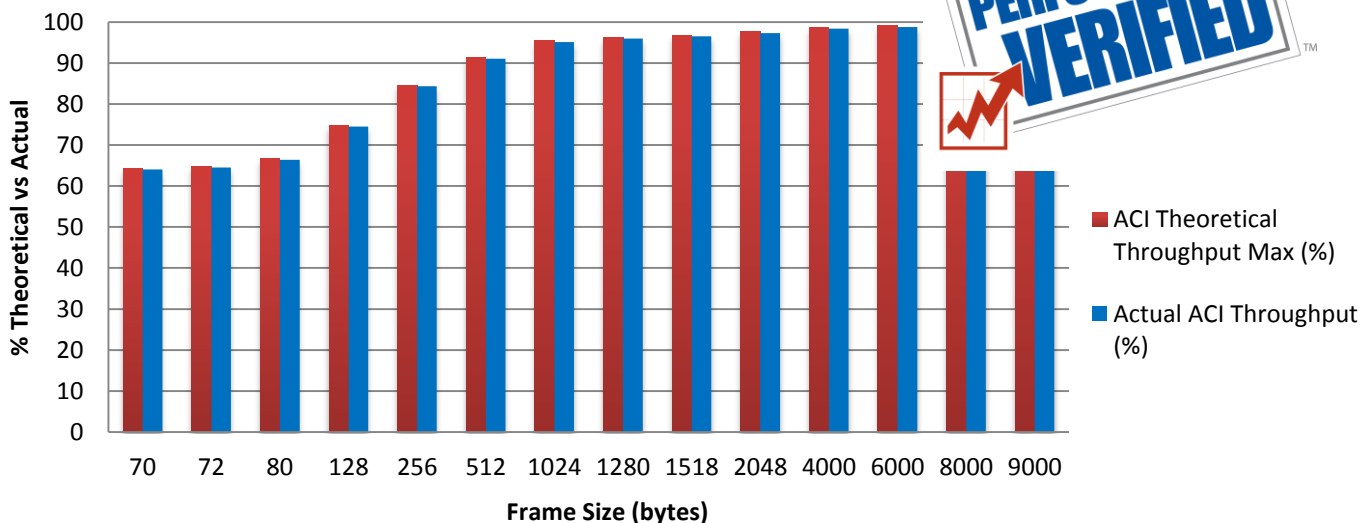
Miercom PERFORMANCE VERIFIED™

Scan to read the full report or visit www.miercom.com/cisco