VulcanCompact
Portable Layer 4-7 Ethernet Traffic Generator and Analyzer

VulcanCompact is used for stateful traffic load testing, analysis and characterization of 1 & 10 Gigabit Ethernet equipment and network infrastructure.

VulcanCompact offers stateful end-to-end testing of network appliances such as switches, firewalls, routers, NAT routers, proxies, bandwidth shapers, and more. The platform is also suitable to characterize entire network infrastructure performance.

Developers of Ethernet-based network appliances can characterize their performance by measuring connection establishment and teardown rates, packet forwarding rate at large numbers of connections and identify performance bottlenecks. The platform is also ideal for rapid validation of performance or regression testing.

Developers of stateful network security devices such as next-generation firewalls (NGFW) can measure TLS handshake rate, TLS throughput, TCP CC/CPS, and HTTP CPS/TPS. Users can also replay their own PCAP files to the DUT for performance verification.

VulcanManager is included for ad-hoc test execution and remote management of test equipment located in multiple locations. VulcanAppMix helps to test with real-world applications and protocols for highly scalable application emulation.

Extreme Performance:

- 14 million TCP Concurrent Connections (CC)*
- 5 million TCP Connections Per Second (CPS)**
- 2.8 million Transactions Per Second (TPS)***
- 700,000 TLS Concurrent Connections

*   14M TCP Clients and 14M TCP Servers on one VulcanCompact.
** Measured with 2 x 10G ports and 14 PEs per port, with no TCP payload.
*** Measured at 10 transactions per connection with 2 x 10G ports.

Features and Benefits

- Stateful TCP traffic load generation with extreme performance – 14 million TCP connections *
- High throughput of TLS encrypted traffic
- Supports 1/10G optical Ethernet interfaces for L4-7
- Configuration and tuning of Ethernet, IP and TCP header fields for advanced traffic scenarios
- Extensive live stats and test reports
- Wire-speed traffic capture with up to 4 million packets capacity
- Switched and routed network topologies, TCP proxy and NAT support
- Free traffic generation and analysis software included (VulcanManager)
- Scalable application emulation for performance testing with real-world protocols, applications, and traffic mixes from VulcanAppMix

PRODUCT NUMBER: C-Vul-28PE-10G

VulcanCompact 1-slot chassis (non-modular, fixed), 28 packet engines, unit controller, AC power, excl. tvcrs
Slot 0: L4-7 Test Ports 2 x SFP+, 2 x 2-speed 10GBASE/SR/LR/DAC (includes 2 x Vul-V10G-P licenses, and Vul-Sec-P for enabling TLS traffic generation on the chassis)

SUPPORTED TRANSCEIVERS
E10GSFPSR - Intel® Ethernet SFP+ SR Optic (1000BASE-SX 1G Ethernet & 10GBASE-SR 10G Ethernet)
E10GSFPLR - Intel® Ethernet SFP+ LR Optic (1000BASE-LX 1G Ethernet & 10GBASE-LR 10G Ethernet)

Technical Specifications

C-Vul-28PE-10G

Port Speeds	12 x 1G/10G
Packet Engines	28
Port Speed Licenses Required	Vul-V1G-P Vul-V10G-P

Non-TLS Performance & Capacities Per Chassis

UDP Concurrent Flows	14 million
UDP Flows per second	14 million/s (measured with 2 x 10G ports and 14 PEs per port)
TCP Concurrent Connections	14 million
TCP Connections per second	5 million/s (max) 2.5 million/s (sustained) (measured with 2 x 10G ports and 14 PEs per port, no TCP payload)
Transactions per second*	2.8 million/s (measured with 2 x 10G ports and 14 PEs per port)
Non-TLS Throughput**	20 Gbps (measured with 2 x 10G ports and 14 PEs per port)

*measured at 10 transactions per connection
**measured with Pattern scenario (1518-byte packet length)

TLS Performance & Capacities Per Chassis

Feature License Required	Vul-Sec-P
TLS Concurrent Connections	700,000
TLS Connections per second*	4,000/s (measured with 2 x 10G ports and 14 PEs per port, no TLS payload)
Transactions per second**	30,000/s (measured with 2 x 10G ports and 14 PEs per port, no TLS payload)
TLS Throughput***	20 Gbps (measured at 2 x 10G ports enabled and 14 PEs per port)

*measured at TLS record size 8KB, 2KB key size, using (C0, 2F) ECDHE_RSA_WITH_AES_128_GCM_SHA256
**measured at 10 transactions per connection
***measured with Pattern bidirectional traffic scenario (1518-byte packet length, TLS record size 8KB, 2KB key size, using (C0, 2F) ECDHE_RSA_WITH_AES_128_GCM_SHA256)

Packet Capture Capability

Packet Capture per Chassis	40 million* 4 million**

*capture mode: small, 128 bytes kept per packet
**capture mode: full, full-size packet

Replay Capability

PCAP Files	50 (per port) 50 (per chassis)
Replay Events*	2 million (per port) 2 million (per chassis)

* one replay event is a TCP/UDP packet in the PCAP file

Port Performance

Port Speed	1G	10G
Port Non-TLS Throughput*	1 Gbps	10 Gbps
Port TLS Throughput**	1 Gbps	10 Gbps

*measured with Pattern scenario (1518-byte packet length, 1000 connections)
**measured with Pattern scenario (1518-byte packet length, 1000 connections, TLS record size 8KB, 2KB key size, using (C0, 2F) ECDHE_RSA_WITH_AES_128_GCM_SHA256)

SPECIFICATIONS

Dimensions
- W: 17.2″ (437 mm)
- H: 1.7″ (43 mm)
- D: 9.8″ (249 mm)
- Weight 10lbs (4.5 kg)

Power
- Input Voltage: 100-240VAC
- Frequency: 50-60Hz

Environmental
- Operating Humidity: 8% – 90% (non-condensing)
- Non-Operating Humidity:5% – 95% (non-condensing)

www.xenanetworks.com
Sales contact: sales@xenanetworks.com