

BreakingPoint Elite™

High Performance Application, Performance, and Security Testing for Network Equipment and Application Servers

The Performance Leader with 15 Million TCP Sessions and 20 Gigabits per second of Layer 4-7 Traffic

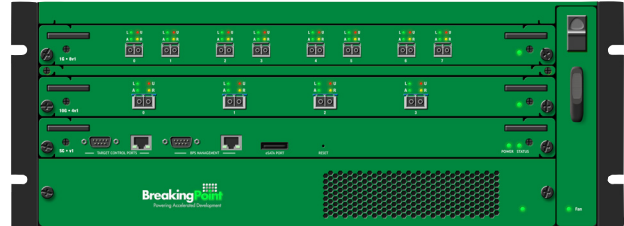
Network Equipment Manufacturers (NEMs) and Service Providers (SPs) developing and deploying a new generation of network devices must:

- Validate performance and functionality under realistic conditions
- Accelerate development and time-to-market
- Gain efficiencies and reduce costs in R&D, QA, and manufacturing

At the same time, the Deep Packet Inspection (DPI) functionality of today's content-aware equipment has introduced millions of new variables that impact performance and security while adding significant cost and complexity to testing.

BreakingPoint Elite provides comprehensive Layer 2-7 testing for network equipment and application servers in a high performance, compact, flexible, and easy-to-use product. Unlike legacy testing tools that are designed for HTTP-only test environments and struggle to generate realistic Layer 4-7 traffic, BreakingPoint provides authentic application traffic blended with live security attacks at speeds of 20 Gigabits per second and faster.

This small footprint chassis also generates 80 Gigabits per second of Layer 2-3 traffic and shatters all previous session performance and throughput capabilities by delivering 15 million simultaneous TCP sessions and 1.5 million TCP sessions per second. BreakingPoint Elite is the only product capable of testing the functionality of next generation equipment including Application Servers, Content Switches, Load Balancers, Proxies, Firewalls, Intrusion Detection and Prevention Systems, Virus and Spam Filters, VPN Gateways, and WAN Optimization devices.



A single BreakingPoint Elite chassis delivers:

- **The Most Realistic Blended Traffic on a Single Port:** The most authentic testing possible with the ability to natively generate blended traffic from more than 60 application protocols and 3,600 live security attacks. New applications are released weekly and an API is available for creating your own proprietary application traffic.
- **Industry-leading Session Performance and Throughput:** The price performance leader with 15 million simultaneous TCP sessions, 1.5 million TCP sessions per second, 20 Gigabits per second of Layer 4-7 traffic and 80 Gigabits per second of Layer 2-3 traffic. Scales easily to more than 200 Gigabits per second of Layer 4-7 traffic and 800 Gigabits per second of Layer 2-3 traffic.
- **Easy-to-Use Automated Testing:** Dramatically simplifies network equipment testing without sacrificing performance and realism. Intuitive management interface, application profile repository, multi-user capabilities, integrated reporting, and extensive automation improve productivity for staff of all skill levels. Reduces time-to-test by 50% or more.
- **Price-Performance Leadership:** Packs an enormous punch in a 4 rack unit 2-slot chassis with the highest 10 GigE port density for stateful Layer 4-7 traffic, lowest cost per TCP session, lowest cost per Gigabit of Layer 4-7 traffic, and lowest power consumption.

BreakingPoint
Powering Accelerated Development

Advantages

- Comprehensive Layer 2-7 testing for today's content-aware equipment including Servers, Switches, Load Balancers, Proxies, Firewalls, Intrusion Detection and Prevention Systems, VPN Gateways, and WAN Optimization devices
- The price-performance leader in server load testing
- Most realistic blended application traffic and live security strikes
 - 60 application protocols including HTTP, SMTP, AOL IM, FIX, IBM DB2, Microsoft™ CIFS/SMB, MAPI, Oracle, Encrypted Bit Torrent™, eDonkey, RADIUS, SIP, Windows Live Messenger, World of Warcraft®, Yahoo!® IM, and many others
 - Support for IPv6 and SSL
 - API for creating your own proprietary applications
 - No degradation with blended protocols
- The most complete security coverage
 - 3,600+ live security attacks
 - Complete Microsoft® Tuesday coverage
 - 80+ evasion techniques
 - Application layer fuzzing for Zero-day attacks
 - Weekly protocol/security update
- Application profiles simulate actual application traffic
- Stateful recreate and replay of captured traffic
- Unprecedented session performance and throughput in a 4U chassis
 - 15 million concurrent TCP sessions
 - 1.5 million TCP sessions per second
 - 20 Gigabits per second of Layer 4-7 traffic scales to 200 Gigabits per second
 - 80 Gigabits per second Layer 2-3 traffic chassis; scales to 800 Gigabits per second
- Testing industry's price-performance leader
 - Highest 10 GigE port density for stateful Layer 4-7 traffic
 - Mix 10 GigE/1 GigE, copper/fiber interfaces
 - Supports multiple users
 - Largest capture buffer per port
 - Smallest footprint
 - Lowest cost per TCP session
 - Lowest cost per Gigabit of Layer 4-7 traffic
- Extensive test automation and pre-configured tests
- Intuitive, cross-platform Adobe® Flash-based management interface
- Automated reporting produces graphical reports
- Future-proof architecture

BreakingPoint Elite Features

Native Application Protocols

Validate the performance and reliability of network equipment and application servers with the most realistic high performance Layer 4-7 testing possible. Unlike legacy testing tools, BreakingPoint Elite provides blended traffic from the widest range of native application protocols and live security attacks with the most realistic application protocols out of the box and an API to accelerate proprietary applications.

- More than 60 application protocols are available including HTTP, SMTP, AOL® IM, FIX, IBM DB2, Microsoft™ CIFS/SMB, MAPI, Oracle, Encrypted Bit Torrent™, eDonkey, RADIUS, SIP, Windows Live Messenger, World of Warcraft®, Yahoo!® IM, and many others.
- Includes IPv6 and SSL support with the ability to generate 80 Gigabits of IPv6 traffic from a single device.
- New application protocols are released each week and an API is available for accelerating proprietary protocols.
- Generate blended application traffic at 20 Gigabits per second without performance degradation.

Comprehensive Security Coverage

Create and modify difficult to detect network security attacks to expose vulnerabilities by combining live security exploits. Full evasion capabilities are built in, including stream segmentation, packet fragmentation, URL obfuscation, FTP telnet opcode and space insertion, RPC fragmentation, protocol fuzzing, and others. All of these attacks can be applied to exploits and blended with application traffic.

- More than 3,600 fully evaded security attacks are available, including contemporary exploits, Microsoft vulnerabilities and Zero-day exploits.
- New applications and strikes are released weekly.
- Provides the most complete Microsoft Tuesday coverage.
- Generates SYN Flood attacks with up to 1,000,000 false and valid connections per second.
- Supports application layer fuzzing for Zero-day detection.

Packet Generation

With BreakingPoint Elite's Layer 2-3 packet generation capabilities, you can determine the maximum raw sustained bits per second or frames per second performance of a device under test.

- Generates 80 Gigabits per second and faster Layer 2-3 traffic.
- Easily scales with multiple chassis to generate 800 Gigabits of Layer 2-3 traffic per second using one test configuration, a single management interface, and integrated reporting.

Application Simulation

Reduce time consuming test configuration with BreakingPoint Application Profiles that combine realistic application protocols to simulate different types of network traffic for Enterprises, SOHO, Small and Medium Business, Service Providers, Higher Education and others. Within Application Profiles you can also create complex real-world transactions with BreakingPoint SuperFlows™ that define the mix of protocols within the application to generate realistic simulated network and applications testing environments.

- Share context between multiple protocols and define the number of simultaneous sessions, session ramp-up rates, and duration of sessions.
- Upload custom content to transmit live virus, spam, or legitimate content as part of the test traffic.
- Alter the parameters after tests have been created and those changes are instantly reflected across all tests.

Server Load Testing

Improve the efficiency and accuracy of performance, security, and compliance testing for Application Servers, Load Balancers and other content-aware equipment while reducing the costs. Instead of requiring racks of servers to generate application traffic, BreakingPoint Elite emulates millions of sessions and speeds of 20 Gigabits per second in a single chassis.

- Validate the integrity of transactions under real world conditions and peak performance.
- Specify port numbers or a range of port numbers for load testing clusters and cloud services.

BreakingPoint Labs

Tap into the collective expertise of the research team at BreakingPoint Labs where application, performance, and security experts use advanced surveillance techniques and methodologies to identify and capture and publish emerging applications and security threats. Once captured, the team rapidly creates an application test package that is delivered to you – often overnight.

- Monitoring and rapid response ensures test environment is always current.
- Provide applications upon request in as little as a day.

Management Interface

Create and modify complex tests without the need for time-consuming scripting using BreakingPoint Elite's intuitive graphical user interface (GUI). Network Neighborhood configurations such as IP addresses and routing information, etc. are completely abstracted from the main test structure to expedite changing tests between switched, routed, NAT, or VLAN environments. Changing IP address ranges can also be completed in seconds and are immediately reflected across all tests.

- Fully cross-platform Adobe® Flash-based GUI.
- Setup and configure complex tests without the need for client software and Tcl scripts.
- Execute the same test across switched, routed, or NAT topologies in seconds.

Test Automation and Tcl Scripting

Reduce configuration to a matter of minutes with extensive test automation. Select from a library of pre-configured tests that are stored in a central repository or customize your own. Tests can be run from any host on the network without having to install client software.

- Use BreakingPoint's pre-configured tests, import a third-party test plan or customize your own.
- Incorporate individual tests into test series for full revision regression testing.
- Control the device under test with built-in serial and Ethernet ports.
- Point and click automation via Telnet, SSH, SNMP and Serial connections.

Recreate and Capture History

Save time and see the effects of real traffic by importing live traffic packet captures and converting it automatically for stateful replay. BreakingPoint Elite replays stateful traffic using our TCP stack, including three-way handshakes and any necessary retransmissions.

- Seamlessly integrate malicious activity into the captured traffic replay.
- Accelerate the debugging of devices under test with up to 2 Gigabytes of capture history per interface allowing you to see traffic sent and results received.

Multi-user Testing and Administration

Multiple users can access BreakingPoint Elite at any given time to maximize test equipment utilization across staff. An innovative port reservation system allows users to assign port ownership to alleviate resource contention.

Scalable Testing

Scale to enormous performance levels by linking multiple BreakingPoint chassis using a single interface, one test configuration and integrated reporting.

- Generate 150 million concurrent TCP sessions and 15 million TCP sessions per second.
- Generate 200 Gigabits per second of Layer 4-7 traffic and 800 Gigabits per second of Layer 2-3 traffic using multiple systems.

Reporting

BreakingPoint produces detailed reports for each test that are rich in graphical and textual content. With integrated reporting you can link multiple products together and produce a single report of findings. Charts can be exported for inclusion in other documents in a variety of different formats.

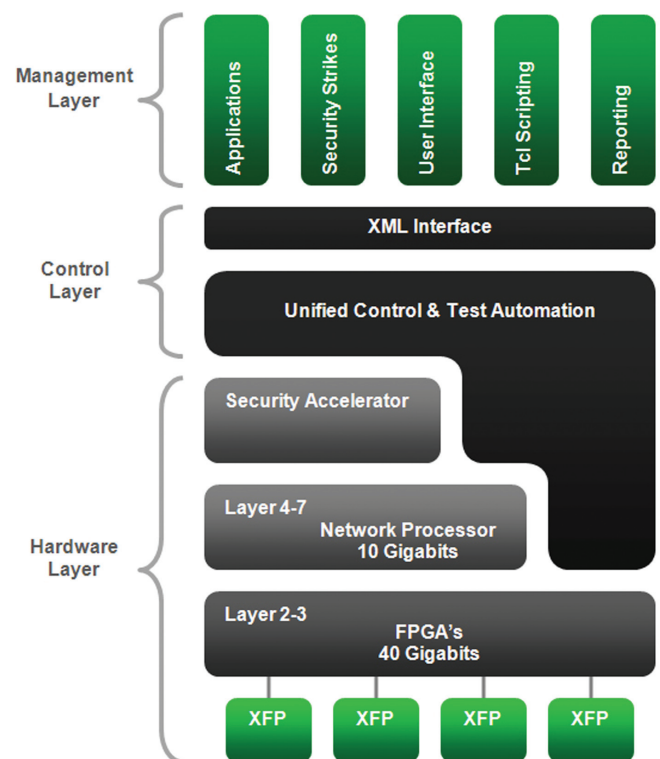
- Automatically produce reports that include a table of contents, executive summary, as well as charts and graphical presentation of detailed results data.
- Export presentation ready information to PDF, RTF, XLS, CSV, and HTML formats.
- Get real-time statistics for monitoring test progress.

BreakingPoint Elite Product Architecture

With the dynamic mix and high volume of application traffic on Enterprise and Service Provider networks today, keeping high performance testing conditions current is an ongoing challenge. Unlike other testing products, BreakingPoint Elite architecture features three distinct but integrated layers that deliver authentic blended application traffic with live security strikes at unprecedented speeds with immense session performance.

- **BreakingPoint Management Layer:** An intuitive management interface, application profile repository, automated reporting and application API that enables addition of new application protocols and security attacks in a matter of hours.
- **BreakingPoint Control Layer:** An intelligent control layer that provides sophisticated test automation eliminating the need to develop new scripts for every test.
- **BreakingPoint High Performance Hardware Layer:** Breakthrough high performance hardware layer features multiple FPGAs, network processors, and an array of embedded processors to produce millions of real application data streams and speeds of 20 Gigabits per second and faster.

The BreakingPoint Elite Architecture



The unique BreakingPoint Elite architecture features three distinct but integrated layers that deliver authentic blended traffic, responsiveness, ease-of-use, and unprecedented performance.

Technical Specifications

BreakingPoint Elite Session Performance and Traffic Generation Per Two Slot Chassis

- Concurrent TCP sessions: 15 million
- TCP sessions per second: 1.5 million
- Native Layer 4-7 traffic: 20 Gigabits per second per chassis
- Layer 2-3 traffic: 80 Gigabits per second per chassis

Security Coverage:

- 3,600+ security strikes
- 80+ evasion techniques
- Complete Microsoft Tuesday coverage
- SYN flood attacks with up to 1,000,000 false and valid connections
- Application layer fuzzing for Zero-day detection

BreakingPoint Elite Specifications

System Configuration

- 2 slot chassis with 1 system controller
- Up to 2 interface cards per chassis; options include:
 - 10 GigE interface card
 - Four 10 GigE ports
 - XFP interface
 - 2 Gigabytes of capture buffer per port
 - 1 GigE interface card
 - Eight 1 GigE ports
 - SFP interface
 - 1 Gigabyte of capture buffer per port

Physical Specifications

- Rack Units: 4
- Installed: 17.4 in W x 7 in H x 19.5 in D (Metric: 44.2 cm W x 17.8 cm H x 49.8 cm D)
- Shipping Weight: 45 lbs. (20.4 kg)
- Operating Environment: 15° C to 40° C
- Non-Operating Environment: -20° C to 70° C
- Power Requirements: 100-240V, 50/60 Hz
- Maximum Power Consumption: 1200W
- Regulatory Approvals: FCC Class A, CE, EN60950
- One-year Warranty



The Benefits of High Performance Content-aware Testing with BreakingPoint Elite

- Ensure reliability under realistic conditions to mitigate the risk of production environment failures.
- Accurately detect hard-to-find performance and security issues faster and ensure the integrity of fixes to reduce development time and accelerate time-to-market.
- Understand the behavior of high performance network equipment under extreme conditions.
- Demonstrate superior performance, security coverage and reliability in competitive scenarios.
- Leverage built in test automation to speed configuration and eliminate the need for custom scripting.
- Drastically reduce the cost and complexity of application server load testing with the industry's best session performance and throughput in the smallest footprint.
- Reduce R&D, QA, and operating costs with comprehensive Layer 2-7 testing in a compact, energy-efficient, easy-to-use product.

Multiple BreakingPoint Elite products configure once, produce integrated reports and manage with one management interface to scale easily to 200 Gigabits per second of Layer 4-7 traffic, 800 Gigabits per second of Layer 2-3 traffic, 150 million concurrent TCP sessions and 15 million TCP sessions per.

Application Protocols Supported

The following is a partial list of supported application protocols. Please, visit www.breakingpointsystems.com for the most up-to-date information as new protocols and security strikes are added weekly.

Authentication

RADIUS Accounting
RADIUS Access

Chat

AOL IM
IRC
Jabber
Windows Live
Messenger
Yahoo IM

Databases

IBM DB2
Informix
Microsoft SQL
Oracle
Postgres
Sybase

Data Transfer

FTP

Gopher

HTTP
NNTP
RSync
TFTP

Data Transfer / File Sharing

IPP
NetBIOS
NFS
SMB/CIFS

Distributed Computing

DCE/RPC

Email

IMAP4 (IMAPv4
Advanced)
POP3 (POP3 Advanced)
SMTP

Enterprise

Applications

DCE/RPC Endpoint
Mapper
DCE/RPC Exchange
Directory
DCE/RPC MAPI
(Exchange)

Financial

FIX
FIXT

Games

World of Warcraft

Media

RTP
RTSP (Advanced)

P2P

Encrypted BitTorrent
eDonkey

Remote Access

RLogin
Telnet

Secure Data Transfer

HTTPS
SSH

Social Networking

Twitter

System/Network Admin

DNS
Ident
Finger
LDAP
NTP

RPC Bind
RPC Mount
SNMP
Sun RPC
Syslog
Time

Testing & Measurement

Chargen
Daytime
Discard
Echo
QOTD

Voice

SIP



Powering Accelerated Development

BreakingPoint provides the industry's fastest, most accurate, responsive and easy-to-use testing solutions, helping network equipment manufacturers, service providers, and enterprises accelerate development of high performance content-aware networks, network devices, and other equipment, while reducing R&D, QA and operating costs. The company is headquartered in Austin, Texas with offices and customers in Canada, China, Finland, France, Germany, India, Israel, Italy, United Kingdom, United States and more. For more information, visit www.breakingpointsystems.com.

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